

# Optimal Time for Collecting Volatile Organic Chemical Samples from Slowly Recovering Wells: Appendixes

Sheng-Fu J. Chou, Beverly L. Herzog,  
John R. Valkenburg, and Robert A. Griffin

## Final Report

Hazardous Waste Research and Information Center  
Department of Energy and Natural Resources  
Dr. Gary D. Miller and Jacqueline Peden, Project Officers  
ENR Contract No. HWR 86019

1991  
Open File Series 1991-11  
Appendixes to Illinois State Geological Survey EG 142  
and HWRIC RR-058

Illinois State Geological Survey  
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Champaign, Illinois 61820

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## EXECUTIVE SUMMARY

Most guidelines for sampling groundwater require the evacuation of multiple bore volumes from the well before a sample is collected. Such a recommendation, however, is impractical for wells finished in fine-grained deposits. These wells have such slow recharge that they cannot recover rapidly enough for the requisite number of well volumes to be removed. For slowly recovering wells, the sample usually is collected either 24 hours after evacuation or some time during well recovery. Neither strategy has been supported by field evidence.

This study defines the optimum time to sample wells finished in fine-grained materials for volatile organic compounds (VOCs). The investigation used wells installed for a previous ISGS project at the SCA Services Inc. industrial waste disposal site near Wilsonville. This site was selected because the geology is typical of glaciated areas used for waste disposal in Illinois, which rendered the results generally applicable. In addition, using the existing monitoring wells resulted in substantial cost savings.

The experiment, designed in conjunction with statistical consultants at the University of Illinois, concentrated on volatile organic compounds because some are highly mobile and only small samples are required. Three hundred samples were collected from 11 wells finished in fine-grained glacial tills and analyzed for up to 19 volatile organic compounds. Each well was sampled before purging and at several time intervals, up to 48 hours, after purging. The experiment was conducted three to five times on each well. Samples were collected with dedicated point-source polytetrafluoroethylene (PTFE) bailers equipped with bottom-emptying devices designed for collecting samples for volatile organic chemical analysis. The wells were evacuated easily with a bailer because they were finished in slowly recharging materials with hydraulic conductivities between  $1 \times 10^{-6}$  and  $7 \times 10^{-5}$  cm/sec.

The samples were analyzed for volatile organic compounds using a purge and trap liquid sample concentrator and gas chromatograph. Samples were loaded into a frit sparge glassware and purged with an inert gas that freed the volatile compounds, which were then trapped on absorbent material. The trap was heated, and the volatile chemicals passed through a gas chromatograph for analysis. To identify and quantify the VOCs, the differential retention times and peak areas shown on their chromatographs were compared with those of standard solutions prepared in an ISGS laboratory.

Results of the volatile organic chemical analyses, listed in appendix A, were examined statistically using a general linear model and the Tukey honestly significant difference test to ascertain whether the changes in water quality relative to time after purging were significant. At the 95% significance level, chemical compositions were not significantly different at any time interval after purging, although samples collected 4 hours after purging generally had slightly higher concentrations than samples collected earlier or later. Concentrations of volatile organics, however, were significantly lower before purging than after purging. These results clearly show that wells finished in fine-grained sediments should be purged before samples are collected for volatile organic chemical analysis.

In a related experiment, 27 pairs of samples were collected for nonvolatile (extractable) organic chemical analysis before purging and 24 hours after purging. Samples were not collected more often because not all of the wells recovered rapidly enough to produce the required sample volume every few hours. The results of the nonvolatile organic chemical analysis are listed in appendix B.

The extractable samples were made basic and serially extracted, which produced the base/neutral fraction. In the aqueous phase, the water was then acidified and serially extracted to produce the acid fraction. Base/neutral extracts and acid extracts were concentrated separately for gas chromatographic analysis. The base/neutral and acid extracts were analyzed in comparison with standard solutions consisting of compounds typically found in extracts. Up to 15 extractable compounds were found in these samples. Each positive result produced one data pair, so that up to 15 pairs of data could result from a pair of samples. The 27 pairs of samples

and the compounds found in each pair resulted in 192 pairs of data for the extractable organic compounds.

Effects of purging on nonvolatile compounds were examined using the pairwise t-test on the concentration values. Concentrations of nonvolatile compounds after purging were statistically higher at a significance level of 95% than those before purging.

# APPENDIX A TIME-SERIES DATA USED FOR DETERMINING OPTIMAL TIME FOR SAMPLING FOR VOLATILE ORGANICS

**Table A1** Time series data for VLD, September 1986 (concentrations in µg/L).

| Sample no. | Time (hr) | Methylene chloride | Chloroform | Dichloroethane | 1,2-Dichloroethane | 1,1,1-Trichloroethane | Trichloroethylene | Tetrachloroethylene | Benzene | Toluene | Ethylbenzene | o-Xylene |
|------------|-----------|--------------------|------------|----------------|--------------------|-----------------------|-------------------|---------------------|---------|---------|--------------|----------|
| V11        | 0.0       | <0.02              | 1.60       | 1.32           | 15.46              | 53.65                 | 0.21              | <0.2                | <0.2    | <0.2    | <0.2         | <0.2     |
| V12        | 1.2       | <0.02              | 1.53       | 1.10           | 11.64              | 50.15                 | 0.28              | <0.2                | <0.2    | <0.2    | <0.2         | <0.2     |
| V13-V14    | 3.5       | <0.02              | 1.31       | 1.06           | 8.26               | 51.38                 | 0.17              | <0.2                | <0.2    | <0.2    | <0.2         | <0.2     |
| V15        | 20.1      | <0.02              | 1.22       | 0.99           | 10.86              | 53.09                 | 0.18              | <0.2                | <0.2    | <0.2    | <0.2         | <0.2     |
| V16        | 26.8      | <0.02              | 1.52       | 1.15           | 13.25              | 59.07                 | 0.59              | <0.2                | <0.2    | <0.2    | <0.2         | <0.2     |
| V17        | 45.2      | <0.02              | 1.57       | 1.25           | 14.09              | 56.63                 | 0.61              | <0.2                | <0.2    | <0.2    | <0.2         | <0.2     |
| Mean       |           | 0.00               | 1.44       | 1.12           | 11.89              | 53.47                 | 0.29              | 0.00                | 0.00    | 0.00    | 0.00         | 0.00     |
| Std dev    |           | 0.00               | 0.15       | 0.11           | 2.40               | 3.06                  | 0.16              | 0.00                | 0.00    | 0.00    | 0.00         | 0.00     |

**Table A2** Time series data for V1D, April 1987 (concentrations in µg/L)

| Sample no. | Time (hr)        | Water level (M)    | % Water level recovery | Methylene chloride | 1,1-Dichloroethylene | 1,1-Dichloroethane | Trans-1,2-Dichloroethylene | Chloroform | 1,2-Dichloroethane | 1,1,1-Trichloroethane | Carbon tetrachloride |
|------------|------------------|--------------------|------------------------|--------------------|----------------------|--------------------|----------------------------|------------|--------------------|-----------------------|----------------------|
| V21        | 0.0 <sup>b</sup> | 3.51 <sup>a</sup>  | 0.00                   | 0.18               | ND <sup>d</sup>      | 0.96               | ND                         | 9.92       | ND                 | ND                    | ND                   |
| V22        | 0.0              | 14.32 <sup>c</sup> | 0.00                   | 0.76               | ND                   | 2.03               | ND                         | ND         | ND                 | 4.75                  | ND                   |
| V23        | 2.0              | 11.50              | 26.9                   | <0.02              | ND                   | 0.70               | ND                         | 4.67       | ND                 | 1.11                  | ND                   |
| V25        | 4.0              | 9.50               | 44.59                  | 0.05               | ND                   | 0.72               | ND                         | ND         | ND                 | 1.64                  | ND                   |
| V26        | 4.0              | 9.50               | 44.59                  | <0.02              | ND                   | 0.81               | ND                         | ND         | ND                 | 0.77                  | ND                   |
| V27        | 6.0              | 8.09               | 57.63                  | 0.12               | ND                   | 0.28               | ND                         | 2.46       | ND                 | 0.98                  | ND                   |
| V28        | 6.0              | 8.09               | 57.63                  | 4.04               | ND                   | 0.47               | ND                         | 0.08       | ND                 | 5.86                  | ND                   |
| V29        | 24.3             | 5.39               | 82.61                  | 3.15               | ND                   | 0.54               | ND                         | 0.10       | ND                 | 6.38                  | ND                   |
| V210       | 24.3             | 5.39               | 82.61                  | 2.97               | ND                   | 0.47               | ND                         | 0.08       | ND                 | 5.02                  | ND                   |
| Mean       |                  |                    |                        | 1.25               | 0.00                 | 0.78               |                            | 1.92       | 0.00               | 2.95                  | 0.00                 |
| Std dev    |                  |                    |                        | 1.55               | 0.00                 | 0.48               |                            | 3.21       | 0.00               | 2.36                  | 0.00                 |

<sup>a</sup> Depth of water before purging

<sup>b</sup> Sample collected at the same time are duplicates

<sup>c</sup> Depth to water immediately after purging

<sup>d</sup> Not detected

| Sample no. | Trichloroethylene | Tetra-chloroethylene | Chloro-benzene | 1,2-Dichloro-benzene | 1,3-Dichloro-benzene | 1,4-Dichloro-benzene | Benzene | Toluene | Ethyl-benzene | m-Xylene | o- & p-Xylene |
|------------|-------------------|----------------------|----------------|----------------------|----------------------|----------------------|---------|---------|---------------|----------|---------------|
| V21        | 79.25             | 0.25                 | ND             | ND                   | ND                   | ND                   | 2.33    | 13.79   | ND            | ND       | ND            |
| V22        | 81.52             | 0.25                 | ND             | ND                   | ND                   | ND                   | 2.27    | 0.70    | ND            | ND       | ND            |
| V23        | 39.22             | 1.03                 | ND             | ND                   | ND                   | ND                   | 1.71    | 10.50   | ND            | ND       | ND            |
| V25        | 42.61             | 1.78                 | ND             | ND                   | ND                   | ND                   | 0.99    | 1.00    | ND            | ND       | ND            |
| V26        | 39.72             | 0.69                 | ND             | ND                   | ND                   | ND                   | 0.44    | 0.60    | ND            | ND       | ND            |
| V27        | 30.75             | 2.89                 | ND             | ND                   | ND                   | ND                   | 1.36    | 0.52    | ND            | ND       | ND            |
| V28        | 49.17             | 0.26                 | ND             | ND                   | ND                   | ND                   | 1.47    | 7.62    | ND            | ND       | ND            |
| V29        | 66.47             | 0.57                 | ND             | ND                   | ND                   | ND                   | 0.63    | 1.85    | ND            | ND       | ND            |
| V210       | 63.00             | 0.49                 | ND             | ND                   | ND                   | ND                   | 0.30    | 1.06    | ND            | ND       | ND            |
| Mean       | 54.63             | 0.91                 | 0.00           | 0.00                 | 0.00                 | 1.28                 | 4.18    | 0.00    | 0.00          | 0.00     | 0.00          |
| Std dev    | 17.46             | 0.84                 | 0.00           | 0.00                 | 0.00                 | 0.71                 | 4.80    | 0.00    | 0.00          | 0.00     | 0.00          |

**Table A3** Time series data for VID, June 1987 (concentrations in µg/L)

| Sample no. | Time (hr) | Water level (M) | % Water level recovery | Methylene chloride | 1,1-Dichloro-ethylene | 1,1-Dichloro-ethane | Trans-1,2-Dichloro-ethylene | Chloroform | Dichloro-ethane | 1,2-Trichloro-ethane | 1,1,1-Trichloro-ethane | Carbon tetrachloride | Trichloro-ethylene |
|------------|-----------|-----------------|------------------------|--------------------|-----------------------|---------------------|-----------------------------|------------|-----------------|----------------------|------------------------|----------------------|--------------------|
| V31        | 0.0       | 4.10            | 0.00                   | 0.26               | ND <sup>a</sup>       | 0.75                | 0.43                        | 0.23       | 3.47            | 8.84                 | 79.20                  | ND                   | 79.20              |
| V32        | 0.0       | 9.58            | 0.00                   | 0.56               | ND                    | 0.77                | 0.44                        | 0.23       | 3.58            | 9.15                 | 81.16                  | ND                   | 81.16              |
| V33        | 2.0       | 8.45            | 20.62                  | 0.64               | ND                    | 0.20                | ND                          | ND         | 0.56            | 1.96                 | 40.82                  | ND                   | 40.82              |
| V34        | 2.0       | 8.45            | 20.62                  | 0.67               | ND                    | 0.19                | ND                          | ND         | 0.49            | 1.78                 | 38.52                  | ND                   | 38.52              |
| V35        | 4.0       | 8.16            | 25.91                  | 0.64               | ND                    | 0.23                | ND                          | ND         | 0.54            | 1.76                 | 39.85                  | ND                   | 39.85              |
| V36        | 4.0       | 8.16            | 25.91                  | 0.82               | ND                    | 0.25                | ND                          | ND         | 0.55            | 1.67                 | 35.87                  | ND                   | 35.87              |
| V37        | 6.0       | 7.92            | 30.29                  | 1.14               | ND                    | 0.27                | ND                          | ND         | 0.55            | 1.57                 | 36.01                  | ND                   | 36.01              |
| V38        | 6.0       | 7.92            | 30.29                  | 0.56               | ND                    | 0.24                | ND                          | ND         | ND              | 2.13                 | 50.62                  | ND                   | 50.62              |
| V39        | 23.9      | 5.43            | 75.73                  | 0.41               | ND                    | 0.34                | 0.15                        | 0.07       | ND              | 4.75                 | 69.61                  | ND                   | 69.61              |
| V310       | 23.9      | 5.43            | 75.73                  | 0.08               | ND                    | 0.31                | 0.18                        | 0.06       | ND              | 3.99                 | 65.68                  | ND                   | 65.68              |
| V311       | 48.0      | 4.53            | 92.15                  | 0.16               | ND                    | 0.39                | 0.16                        | 0.1        | ND              | 5.51                 | 73.83                  | ND                   | 73.83              |
| V312       | 48.0      | 4.53            | 92.15                  | 0.64               | ND                    | 0.37                | 0.12                        | 0.08       | ND              | 5.68                 | 70.90                  | ND                   | 70.90              |
| Mean       |           |                 |                        | 0.55               | 0.00                  | 0.36                | 0.12                        | 0.06       | 0.81            | 4.07                 | 56.84                  | 0.00                 | 56.84              |
| Std dev    |           |                 |                        | 0.28               | 0.00                  | 0.19                | 0.16                        | 0.08       | 1.24            | 2.65                 | 17.35                  | 0.00                 | 17.35              |

| Sample no. | Tetrachloro-ethylene | Chloro-benzene | 1,2-Dichloro-benzene | 1,3-Dichloro-benzene | 1,4-Dichloro-benzene | Benzene | Toluene | Ethyl-benzene | m-Xylene | o- & p-Xylene |
|------------|----------------------|----------------|----------------------|----------------------|----------------------|---------|---------|---------------|----------|---------------|
| V31        | 0.69                 | ND             | ND                   | ND                   | 1.5                  | ND      | ND      | ND            | ND       | ND            |
| V32        | 0.74                 | ND             | ND                   | ND                   | 1.44                 | ND      | ND      | ND            | ND       | ND            |
| V33        | 0.14                 | ND             | ND                   | ND                   | 0.84                 | ND      | ND      | ND            | ND       | ND            |
| V34        | 0.14                 | ND             | ND                   | ND                   | 0.62                 | ND      | ND      | ND            | ND       | ND            |
| V35        | 0.15                 | ND             | ND                   | ND                   | 0.90                 | ND      | ND      | ND            | ND       | ND            |
| V36        | 0.12                 | ND             | ND                   | ND                   | 1.22                 | ND      | ND      | ND            | ND       | ND            |
| V37        | 0.12                 | ND             | ND                   | ND                   | ND                   | ND      | ND      | ND            | ND       | ND            |
| V38        | 0.25                 | ND             | ND                   | ND                   | ND                   | ND      | ND      | ND            | ND       | ND            |
| V39        | 0.5                  | ND             | ND                   | ND                   | ND                   | ND      | ND      | ND            | ND       | ND            |
| V310       | 0.45                 | ND             | ND                   | ND                   | ND                   | ND      | ND      | ND            | ND       | ND            |
| V311       | 0.57                 | ND             | ND                   | ND                   | ND                   | ND      | ND      | ND            | ND       | ND            |
| V312       | 0.52                 | ND             | ND                   | ND                   | ND                   | ND      | ND      | ND            | ND       | ND            |
| Mean       | 0.36                 | 0.00           | 0.00                 | 0.00                 | 0.54                 | 0.00    | 0.00    | 0.00          | 0.00     | 0.00          |
| Std dev    | 0.23                 | 0.00           | 0.00                 | 0.00                 | 0.59                 | 0.00    | 0.00    | 0.00          | 0.00     | 0.00          |

**Table A4** Time series data for VIM, September 1986 (concentrations  $\mu\text{g/L}$ ).

| Sample no. | Time<br>(hr) | Methylene<br>chloride | Chloro-<br>form | 1,2-<br>Dichloro-<br>ethane | 1,1,1-<br>Trichloro-<br>ethane | Trichloro-<br>ethylene | Tetrachloro-<br>ethylene | Benzene | Toluene | Ethyl-<br>benzene | o-Xylene |
|------------|--------------|-----------------------|-----------------|-----------------------------|--------------------------------|------------------------|--------------------------|---------|---------|-------------------|----------|
| V11        | 0.0          | 2.32                  | 11.79           | 0.30                        | 290.71                         | 386.80                 | <0.02                    | 71.02   | 583.28  | 1006.20           | 914.45   |
| V12        | 0.8          | 4.38                  | 12.85           | 6.20                        | 304.02                         | 435.87                 | <0.02                    | 89.10   | 722.97  | 1725.59           | 1363.38  |
| V13-V14    | 3.3          | 5.46                  | 12.15           | 3.05                        | 298.53                         | 440.18                 | <0.02                    | 89.16   | 704.22  | 1618.60           | 1648.79  |
| V15        | 19.8         | 1.07                  | 11.04           | 4.00                        | 294.19                         | 425.23                 | <0.02                    | 82.23   | 653.95  | 1440.28           | 1722.11  |
| V16        | 26.6         | 8.90                  | 10.19           | 3.70                        | 287.08                         | 405.92                 | <0.02                    | 74.39   | 585.22  | 916.90            | 1536.95  |
| V17        | 44.9         | 3.55                  | 10.76           | 4.54                        | 281.89                         | 392.96                 | <0.02                    | 76.71   | 488.11  | 915.90            | 1035.81  |
| Mean       |              | 4.28                  | 11.60           | 3.45                        | 294.91                         | 418.80                 | 0.00                     | 81.18   | 649.93  | 1341.51           | 1437.14  |
| Std dev    |              | 2.50                  | 0.92            | 1.90                        | 5.93                           | 19.90                  | 0.00                     | 7.44    | 58.19   | 324.59            | 287.96   |

**Table A5** Times series data for VLM, April 1987 (concentrations in µg/L)

| Sample no. | Time (hr) | Water level (M) | Water level recovery | Methylene chloride | 1,1-Dichloroethylene | 1,1-Dichloroethane | Trans-1,2-Dichloroethylene | Chloroform | Dichloroethane  | 1,1,1-Trichloroethane | Carbon tetrachloride | Trichloroethylene |
|------------|-----------|-----------------|----------------------|--------------------|----------------------|--------------------|----------------------------|------------|-----------------|-----------------------|----------------------|-------------------|
| V21        | 0.0       | 3.59            | 0.00                 | 1.21               | 2.04                 | 2.71               | 14.46                      | 1.61       | ND <sup>a</sup> | 109.68                | ND                   | 282.86            |
| V22        | 0.0       | 6.43            | 0.00                 | 1.43               | 1.80                 | 2.55               | 13.20                      | 1.60       | ND              | 101.68                | ND                   | 276.78            |
| V23        | 2.0       | 3.92            | 88.38                | 2.96               | 12.94                | 10.13              | 28.41                      | 11.81      | ND              | 229.80                | ND                   | 440.45            |
| V24        | 2.0       | 3.92            | 88.38                | 3.60               | 12.53                | 10.49              | 29.04                      | 12.39      | ND              | 227.91                | ND                   | 440.13            |
| V25        | 4.0       | 3.63            | 98.59                | 4.95               | 15.82                | 11.59              | 29.72                      | 13.34      | ND              | 242.17                | ND                   | 462.74            |
| V26        | 4.0       | 3.63            | 98.59                | 5.43               | 15.95                | 12.01              | 30.50                      | 13.68      | ND              | 244.05                | ND                   | 471.05            |
| V27        | 6.0       | 3.57            | 100.70               | 8.45               | 16.49                | 12.13              | 31.72                      | 14.16      | ND              | 245.22                | ND                   | 473.71            |
| V29        | 23.7      | 3.56            | 101.06               | 4.71               | 13.50                | 10.04              | 25.51                      | 12.17      | ND              | 210.59                | ND                   | 396.74            |
| V210       | 23.7      | 3.56            | 101.06               | 5.69               | 13.67                | 10.43              | 25.22                      | 12.29      | ND              | 208.44                | ND                   | 393.69            |
| Mean       |           |                 |                      | 4.27               | 11.64                | 9.13               | 25.31                      | 10.34      | 0.00            | 202.17                | 0.00                 | 404.24            |
| Std dev    |           |                 |                      | 2.14               | 5.36                 | 3.55               | 6.46                       | 4.72       | 0.00            | 53.12                 | 0.00                 | 71.85             |

<sup>a</sup> Not detected

| Sample no. | Tetra-chloro-ethylene | Chloro-benzene | Dichloro-benzene | 1,2-Dichloro-benzene | 1,3-Dichloro-benzene | 1,4-Dichloro-benzene | Benzene | Toluene | Ethyl-benzene | m-Xylene | o- & p-Xylene |
|------------|-----------------------|----------------|------------------|----------------------|----------------------|----------------------|---------|---------|---------------|----------|---------------|
| V21        | 19.65                 | 5.68           |                  | 21.67                | 7.80                 | 34.50                | 17.26   | 24.99   | ND            | ND       | ND            |
| V22        | 25.23                 | 7.81           |                  | 22.67                | 7.44                 | 32.56                | 16.02   | 18.89   | ND            | ND       | 0.88          |
| V23        | 49.84                 | 130.31         |                  | 158.57               | 30.43                | 149.80               | 93.88   | 786.41  | 1203.21       | 1662.87  | 1020.30       |
| V24        | 40.63                 | 125.36         |                  | 145.99               | 28.26                | 142.11               | 94.19   | 1078.06 | 1225.33       | 1426.79  | 1017.37       |
| V25        | 48.67                 | 136.05         |                  | 169.19               | 33.77                | 158.91               | 107.78  | 1447.30 | 1278.56       | 2286.37  | 1104.50       |
| V26        | 49.56                 | 120.66         |                  | 173.74               | 35.76                | 162.42               | 108.74  | 1498.57 | 1301.61       | 2291.74  | 1106.08       |
| V27        | 52.12                 | 105.77         |                  | 187.54               | 38.59                | 184.86               | 116.07  | 1634.55 | 1283.55       | 2620.46  | 1195.77       |
| V29        | 47.28                 | 101.81         |                  | 155.52               | 27.54                | 140.90               | 96.06   | 752.61  | 1255.85       | 1856.38  | 989.36        |
| V210       | 46.40                 | 90.87          |                  | 146.69               | 26.34                | 137.08               | 93.65   | 716.15  | 1105.48       | 1670.35  | 931.49        |
| Mean       | 42.15                 | 91.59          |                  | 131.19               | 26.21                | 127.02               | 82.63   | 884.17  | 961.51        | 1535.00  | 818.42        |
| Std dev    | 11.03                 | 47.34          |                  | 59.63                | 10.63                | 51.79                | 36.06   | 561.47  | 516.86        | 893.03   | 443.16        |

**Table A6** Time series data for VLM, June 1987 (concentrations in µg/L).

| Sample no. | Time (hr) | Water level (M) | Water level recovery | Methylene chloride | 1,1-Dichloroethylene | 1,1-Dichloroethane | Trans-1,2-Dichloroethylene | Chloroform | 1,2-Dichloroethane | 1,1,1-Trichloroethane | Carbon tetrachloride | Trichloroethylene |
|------------|-----------|-----------------|----------------------|--------------------|----------------------|--------------------|----------------------------|------------|--------------------|-----------------------|----------------------|-------------------|
| V31        | 0.0       | 3.83            | 0.00                 | 76.07              | 9.36                 | 8.65               | 15.77                      | 6.13       | 182.48             | 275.89                | ND <sup>a</sup>      | 258.39            |
| V32        | 0.0       | 6.43            | 0.00                 | 56.72              | 8.27                 | 4.98               | 13.01                      | 4.44       | 138.55             | 201.10                | ND                   | 281.45            |
| V33        | 2.0       | 3.92            | 96.54                | 57.92              | 18.49                | 6.29               | 41.95                      | 11.58      | 262.84             | 303.92                | ND                   | 444.06            |
| V34        | 2.0       | 3.92            | 96.54                | 95.63              | 29.41                | 10.57              | 52.17                      | 15.50      | 266.56             | 311.33                | ND                   | 471.59            |
| V35        | 4.0       | 3.88            | 98.08                | 35.00              | 30.45                | 19.56              | 50.51                      | 16.01      | 271.71             | 315.90                | ND                   | 486.27            |
| V36        | 4.0       | 3.88            | 98.08                | 44.20              | 36.16                | 11.50              | 50.01                      | 15.59      | 265.91             | 310.10                | ND                   | 464.27            |
| V37        | 6.0       | 3.87            | 98.46                | 33.71              | 27.24                | 16.36              | 44.51                      | 14.27      | 263.10             | 293.82                | ND                   | 441.78            |
| V38        | 6.0       | 3.87            | 98.46                | 37.92              | 26.57                | 10.64              | 38.74                      | 12.13      | 238.08             | 261.25                | ND                   | 381.53            |
| V39        | 23.8      | 3.86            | 98.85                | 38.66              | 28.43                | 18.43              | 50.43                      | 15.53      | 269.77             | 306.26                | ND                   | 463.21            |
| V310       | 23.8      | 3.86            | 98.85                | 39.11              | 23.72                | 12.14              | 47.11                      | 14.10      | 223.85             | 360.09                | ND                   | 482.15            |
| V311       | 47.9      | 3.85            | 99.23                | 36.02              | 27.35                | 13.48              | 51.19                      | 15.90      | 215.61             | 374.63                | ND                   | 496.96            |
| V312       | 47.9      | 3.85            | 99.23                | 44.75              | 20.13                | 12.20              | 56.31                      | 7.94       | 224.43             | 329.71                | ND                   | 453.60            |
| Mean       |           |                 |                      | 49.64              | 23.80                | 12.07              | 42.64                      | 12.43      | 235.24             | 303.67                | 0.00                 | 427.10            |
| Std dev    |           |                 |                      | 18.28              | 8.03                 | 4.25               | 13.44                      | 3.92       | 39.53              | 43.15                 | 0.00                 | 75.85             |

<sup>a</sup> Not detected

| Sample no. | Tetrachloroethylene | Chlorobenzene | 1,2-Dichlorobenzene | 1,3-Dichlorobenzene | 1,4-Dichlorobenzene | Benzene | Toluene | Ethylbenzene | m-Xylene | o- & p-Xylene |
|------------|---------------------|---------------|---------------------|---------------------|---------------------|---------|---------|--------------|----------|---------------|
| V31        | 23.26               | 50.24         | 47.68               | 6.93                | 47.23               | 79.25   | 415.39  | 271.71       | 198.22   | 204.07        |
| V32        | 29.79               | 39.56         | 41.75               | 7.85                | 56.92               | 69.84   | 457.27  | 278.73       | 222.34   | 114.39        |
| V33        | 55.73               | 121.85        | 161.36              | 29.32               | 177.15              | 125.01  | 760.20  | 1319.36      | 1639.93  | 1092.39       |
| V34        | 66.60               | 155.33        | 156.51              | 32.65               | 235.97              | 132.72  | 801.32  | 1194.24      | 1709.96  | 1153.22       |
| V35        | 68.61               | 156.82        | 170.81              | 34.63               | 216.50              | 141.94  | 901.72  | 1616.00      | 2203.58  | 1298.34       |
| V36        | 58.14               | 156.16        | 159.55              | 35.12               | 206.56              | 137.91  | 830.90  | 1398.43      | 1980.97  | 1135.66       |
| V37        | 52.25               | 107.73        | 164.22              | 31.73               | 171.15              | 136.70  | 831.76  | 1353.65      | 1925.73  | 1152.53       |
| V38        | 46.39               | 64.55         | 155.77              | 32.15               | 181.71              | 105.31  | 808.35  | 1290.84      | 2127.91  | 1294.50       |
| V39        | 60.03               | 131.05        | 165.11              | 30.22               | 214.80              | 148.88  | 946.56  | 1124.91      | 2288.89  | 1355.17       |
| V310       | 49.16               | 134.73        | 147.81              | 29.86               | 226.07              | 131.62  | 745.08  | 925.00       | 1868.65  | 1201.86       |
| V311       | 59.59               | 134.96        | 139.61              | 31.07               | 193.33              | 122.48  | 756.03  | 980.33       | 1765.78  | 1122.60       |
| V312       | 58.39               | 125.31        | 142.89              | 27.55               | 175.15              | 125.18  | 742.56  | 1011.73      | 1799.67  | 1095.21       |
| Mean       | 52.33               | 114.86        | 137.76              | 27.42               | 175.21              | 121.40  | 749.76  | 1063.74      | 1644.30  | 1018.33       |
| Std dev    | 13.11               | 39.53         | 42.54               | 9.19                | 58.66               | 23.52   | 152.42  | 399.08       | 668.42   | 393.08        |

**Table A7** Time series data for VLS, September 1986 (concentrations in  $\mu\text{g/L}$ ).

| Sample no. | Time<br>(hr) | Methylene<br>chloride | Chloro-<br>form | 1,2-<br>Dichloro-<br>ethane | 1,1,1-<br>Trichloro-<br>ethane | Trichloro-<br>ethylene | Tetrachloro-<br>ethylene | Carbon<br>tetrachloride |
|------------|--------------|-----------------------|-----------------|-----------------------------|--------------------------------|------------------------|--------------------------|-------------------------|
| V11        | 0.0          | <0.02                 | 0.80            | 0.29                        | 4.38                           | 31.91                  | <0.02                    | <0.04                   |
| V12        | 3.2          | <0.02                 | 1.15            | 0.57                        | 5.70                           | 44.69                  | <0.02                    | <0.04                   |
| V13-V14    | 19.8         | <0.02                 | 1.24            | 0.40                        | 5.93                           | 47.61                  | <0.02                    | <0.04                   |
| V16        | 45.4         | <0.02                 | 0.68            | 0.44                        | 5.78                           | 36.57                  | <0.02                    | <0.04                   |
| Mean       |              | 0.00                  | 0.97            | 0.43                        | 5.45                           | 40.20                  | 0.00                     | 0.00                    |
| Std dev    |              | 0.00                  | 0.23            | 0.10                        | 0.62                           | 6.26                   | 0.00                     | 0.00                    |

**Table A8** Time series data for VLS, April 1987 (concentrations in µg/L).

| Sample no. | Time (hr) | Water level (M) | Water level recovery | Methylene chloride | 1,1-Dichloro-ethylene | 1,1-Dichloro-ethane | Trans-1,2-Dichloro-ethylene | Chloroform | 1,2-Dichloro-ethane | 1,1,1-Trichloro-ethane | Carbon tetrachloride | Trichloro-ethylene |
|------------|-----------|-----------------|----------------------|--------------------|-----------------------|---------------------|-----------------------------|------------|---------------------|------------------------|----------------------|--------------------|
| V21        | 0.0       | 3.51            | 0.00                 | 0.37               | ND <sup>a</sup>       | 0.81                | 0.78                        | 0.62       | 1.10                | 6.64                   | ND                   | 46.68              |
| V22        | 0.0       | 4.98            | 0.00                 | 0.38               | ND                    | 0.96                | 1.03                        | 0.83       | 1.04                | 7.51                   | ND                   | 53.31              |
| V23        | 2.0       | 4.57            | 27.89                | 0.56               | ND                    | 0.94                | 0.29                        | 0.23       | 1.10                | 4.10                   | ND                   | 38.29              |
| V24        | 2.0       | 4.57            | 27.89                | 0.94               | ND                    | 0.73                | 0.33                        | 0.47       | 0.69                | 4.52                   | ND                   | 42.89              |
| V25        | 4.0       | 4.43            | 37.41                | 0.80               | ND                    | 0.73                | 0.40                        | 0.44       | 0.32                | 2.68                   | ND                   | 46.65              |
| V26        | 4.0       | 4.43            | 37.41                | 0.76               | ND                    | 0.63                | 0.35                        | 0.41       | 0.18                | 2.00                   | ND                   | 39.22              |
| V27        | 6.0       | 4.38            | 40.82                | ND                 | ND                    | 0.66                | 0.35                        | 0.40       | 0.25                | 2.89                   | ND                   | 39.32              |
| V28        | 6.0       | 4.38            | 40.82                | 0.45               | 0.09                  | 0.62                | 0.29                        | 0.31       | 0.16                | 1.53                   | ND                   | 28.99              |
| V29        | 23.7      | 3.49            | 101.36               | 1.10               | 0.09                  | 0.62                | 0.39                        | 0.30       | ND                  | 1.29                   | ND                   | 30.31              |
| V210       | 23.7      | 3.49            | 101.36               | 0.47               | 0.08                  | 0.57                | 0.34                        | 0.39       | ND                  | 0.99                   | ND                   | 29.27              |
| Mean       |           |                 |                      | 0.58               | 0.03                  | 0.73                | 0.46                        | 0.44       | 0.48                | 3.42                   | 0.00                 | 35.90              |
| Std dev    |           |                 |                      | 0.31               | 0.04                  | 0.13                | 0.23                        | 0.16       | 0.43                | 2.14                   | 0.00                 | 13.56              |

<sup>a</sup> Not detected

| Sample no. | Tetra-chloro-ethylene | Chloro-benzene | 1,2-Dichloro-benzene | 1,3-Dichloro-benzene | 1,4-Dichloro-benzene | Benzene | Toluene | Ethyl-benzene | m-Xylene | o- & p-Xylene |
|------------|-----------------------|----------------|----------------------|----------------------|----------------------|---------|---------|---------------|----------|---------------|
| V21        | ND                    | ND             | ND                   | ND                   | ND                   | 4.24    | 16.82   | ND            | ND       | ND            |
| V22        | ND                    | ND             | ND                   | ND                   | ND                   | 3.30    | 13.48   | ND            | ND       | ND            |
| V23        | ND                    | ND             | ND                   | ND                   | ND                   | 6.12    | 14.25   | 1.59          | ND       | ND            |
| V24        | ND                    | ND             | ND                   | ND                   | ND                   | 4.35    | 11.18   | ND            | ND       | ND            |
| V25        | ND                    | ND             | ND                   | ND                   | ND                   | 0.45    | 3.98    | ND            | ND       | ND            |
| V26        | ND                    | ND             | ND                   | ND                   | ND                   | 0.55    | 4.01    | ND            | ND       | ND            |
| V27        | ND                    | ND             | ND                   | ND                   | ND                   | 0.67    | 4.99    | ND            | ND       | ND            |
| V28        | ND                    | ND             | ND                   | ND                   | ND                   | ND      | 1.24    | ND            | ND       | ND            |
| V29        | ND                    | ND             | ND                   | ND                   | ND                   | ND      | 1.09    | ND            | ND       | ND            |
| V210       | ND                    | ND             | ND                   | ND                   | ND                   | ND      | 1.40    | ND            | ND       | ND            |
| Sum        | 0.00                  | 0.00           | 0.00                 | 0.00                 | 0.00                 | 19.68   | 7.24    | 0.16          | 0.00     | 0.00          |
| Std dev    | 0.00                  | 0.00           | 0.00                 | 0.00                 | 0.00                 | 2.18    | 5.74    | 0.48          | 0.00     | 0.00          |

**Table A9** Time series data for VLS, June 1987 (concentrations in µg/L).

| Sample no. | Time (hr) | Water level (M) | % Water level recovery | Methylene chloride | 1,1-Dichloro-ethylene | 1,1-Dichloro-ethane | Trans-1,2-Dichloro-ethylene | Chloro-form | 1,2-Dichloro-ethane | 1,1,1-Trichloro-ethane | Carbon tetra-chloride | Trichloro-ethylene |
|------------|-----------|-----------------|------------------------|--------------------|-----------------------|---------------------|-----------------------------|-------------|---------------------|------------------------|-----------------------|--------------------|
| V31        | 0.0       | 3.90            | 0.00                   | 0.76               | ND                    | 0.61                | 0.39                        | 0.30        | ND                  | 1.24                   | ND                    | 35.43              |
| V32        | 0.0       | 4.98            | 0.00                   | 0.42               | ND                    | 0.57                | 0.35                        | 0.29        | ND                  | 0.99                   | ND                    | 27.37              |
| V33        | 2.0       | 4.73            | 23.15                  | 0.49               | ND                    | 0.62                | 0.38                        | 0.16        | 0.22                | 1.59                   | ND                    | 36.74              |
| V34        | 2.0       | 4.73            | 23.15                  | 0.35               | ND                    | 0.61                | 0.34                        | 0.44        | 0.31                | 1.58                   | ND                    | 35.68              |
| V35        | 4.0       | 4.69            | 26.85                  | 1.17               | 0.13                  | 0.65                | 0.34                        | 0.37        | 0.55                | 1.85                   | ND                    | 39.33              |
| V35        | 4.0       | 4.69            | 26.85                  | 0.82               | ND                    | 0.56                | 0.31                        | 0.32        | 0.31                | 1.52                   | ND                    | 31.98              |
| V37        | 6.0       | 4.67            | 28.70                  | 0.72               | 0.17                  | 0.62                | 0.33                        | 0.36        | 0.27                | 1.55                   | ND                    | 33.27              |
| V38        | 6.0       | 4.67            | 28.70                  | 0.64               | 0.18                  | 0.63                | 0.33                        | 0.37        | 0.18                | 2.03                   | ND                    | 37.03              |
| V39        | 23.8      | 4.06            | 85.19                  | 1.76               | 0.17                  | 0.59                | 0.33                        | 0.33        | 0.19                | 1.78                   | ND                    | 28.78              |
| V310       | 23.8      | 4.06            | 85.19                  | ND <sup>a</sup>    | 0.07                  | 0.67                | 0.42                        | 0.40        | 0.25                | 1.74                   | ND                    | 36.29              |
| V311       | 48.0      | 3.98            | 92.59                  | ND                 | 0.13                  | 0.69                | 0.50                        | 0.38        | ND                  | 1.47                   | ND                    | 35.28              |
| V312       | 48.0      | 3.98            | 92.59                  | ND                 | 0.14                  | 0.66                | 0.42                        | 0.35        | ND                  | 1.30                   | ND                    | 31.44              |
| Mean       |           |                 |                        | 0.59               | 0.08                  | 0.62                | 0.37                        | 0.36        | 0.19                | 1.55                   | 0.00                  | 34.05              |
| Std dev    |           |                 |                        | 0.50               | 0.07                  | 0.04                | 0.05                        | 0.04        | 0.16                | 0.27                   | 0.00                  | 3.41               |

<sup>a</sup> Not detected

| Sample no. | Tetra-chloro-ethylene | Chloro-benzene | 1,2-Dichloro-benzene | 1,3-Dichloro-benzene | 1,4-Dichloro-benzene | Benzene | Toluene | Ethyl-benzene | m-Xylene | o- & p-Xylene |
|------------|-----------------------|----------------|----------------------|----------------------|----------------------|---------|---------|---------------|----------|---------------|
| V31        | ND                    | ND             | ND                   | ND                   | ND                   | ND      | ND      | ND            | ND       | ND            |
| V32        | ND                    | ND             | ND                   | ND                   | ND                   | ND      | ND      | ND            | ND       | ND            |
| V33        | ND                    | ND             | ND                   | ND                   | ND                   | ND      | 1.51    | ND            | ND       | ND            |
| V34        | ND                    | ND             | ND                   | ND                   | ND                   | ND      | ND      | ND            | ND       | ND            |
| V35        | ND                    | ND             | ND                   | ND                   | ND                   | ND      | ND      | ND            | ND       | ND            |
| V35        | ND                    | ND             | ND                   | ND                   | ND                   | ND      | ND      | ND            | ND       | ND            |
| V37        | ND                    | ND             | ND                   | ND                   | ND                   | ND      | ND      | ND            | ND       | ND            |
| V38        | ND                    | ND             | ND                   | ND                   | ND                   | ND      | ND      | ND            | ND       | ND            |
| V39        | ND                    | ND             | ND                   | ND                   | ND                   | ND      | 1.60    | ND            | ND       | ND            |
| V310       | ND                    | ND             | ND                   | ND                   | ND                   | ND      | ND      | ND            | ND       | ND            |
| V311       | ND                    | ND             | ND                   | ND                   | ND                   | ND      | ND      | ND            | ND       | ND            |
| V312       | ND                    | ND             | ND                   | ND                   | ND                   | ND      | ND      | ND            | ND       | ND            |
| Mean       | 0.00                  | 0.00           | 0.00                 | 0.00                 | 0.00                 | 0.00    | 0.26    | 0.00          | 0.00     | 0.00          |
| Std dev    | 0.00                  | 0.00           | 0.00                 | 0.00                 | 0.00                 | 0.00    | 0.58    | 0.00          | 0.00     | 0.00          |

**Table A10** Times series data for V2D, September 1986 (concentrations in  $\mu\text{g/L}$ ).

| Sample no. | Time (hr) | Water depth(ft) | % Water level recovery | Methylene chloride | Chloroform | 1,2-Dichloroethane | 1,1,1-Trichloroethane | Trichloroethylene | Tetrachloroethylene | Benzene | Toluene | Ethylbenzene | o-p-Xylene |
|------------|-----------|-----------------|------------------------|--------------------|------------|--------------------|-----------------------|-------------------|---------------------|---------|---------|--------------|------------|
| V11        | 0.0       | 15.83           | 0.0                    | 0.20               | 0.23       | <0.03              | <0.02                 | 0.76              | 0.32                | <0.2    | <0.2    | <0.2         | <0.2       |
| V13        | 3.8       | 38.00           | 87.6                   | 0.13               | 0.88       | 0.42               | <0.02                 | 7.36              | <0.02               | <0.2    | <0.2    | <0.2         | <0.2       |
| V14        | 5.0       | 18.58           | 89.1                   | 0.09               | 0.03       | 0.38               | 0.43                  | 9.94              | <0.02               | <0.2    | <0.2    | <0.2         | <0.2       |
| V15        | 20.7      | 16.54           | 96.8                   | 0.84               | 0.03       | 0.27               | 0.32                  | 13.03             | <0.02               | <0.2    | <0.2    | <0.2         | <0.2       |
| V16        | 26.5      | 16.08           | 98.9                   | 4.22               | 0.12       | 0.23               | 0.42                  | 9.44              | <0.02               | <0.2    | <0.2    | <0.2         | <0.2       |
| V17        | 43.8      | 16.00           | 99.2                   | 0.20               | <0.03      | 0.26               | 0.20                  | 7.85              | <0.02               | <0.2    | <0.2    | <0.2         | <0.2       |
| Mean       |           |                 |                        | 0.95               | 0.22       | 0.26               | 0.23                  | 8.06              | 0.05                | 0.00    | 0.00    | 0.00         | 0.00       |
| Std dev    |           |                 |                        | 1.49               | 0.31       | 0.13               | 0.18                  | 3.74              | 0.12                | 0.00    | 0.00    | 0.00         | 0.00       |

**Table A11** Time series data for V2D, April 1987 (concentrations in µg/L).

| Sample no. | Time (hr) | Water level (M) | % Water level recovery | Methylene chloride | 1,1-Dichloroethylene | 1,1-Dichloroethane | Trans-1,2-Dichloroethylene | Chloroform | 1,2-Dichloroethane | 1,1,1-Trichloroethane | Carbon tetrachloride | Trichloroethylene |
|------------|-----------|-----------------|------------------------|--------------------|----------------------|--------------------|----------------------------|------------|--------------------|-----------------------|----------------------|-------------------|
| V21        | 0.0       | 4.20            | 0.00                   | 1.86               | ND <sup>a</sup>      | 0.14               | 0.46                       | 0.20       | 1.10               | 2.52                  | ND                   | 8.54              |
| V22        | 0.0       | 10.06           | 0.00                   | 0.84               | ND                   | 0.13               | ND                         | ND         | 0.97               | 2.07                  | ND                   | 8.10              |
| V23        | 2.0       | 5.48            | 78.16                  | 0.72               | ND                   | 0.11               | ND                         | ND         | 1.35               | 2.81                  | ND                   | 6.79              |
| V24        | 2.0       | 5.48            | 78.16                  | 0.80               | ND                   | 0.18               | ND                         | ND         | 1.02               | 0.05                  | ND                   | 4.36              |
| V25        | 4.0       | 5.11            | 84.47                  | 1.07               | ND                   | 0.18               | ND                         | ND         | 0.25               | 1.65                  | ND                   | 8.01              |
| V26        | 4.0       | 5.11            | 84.47                  | 0.48               | ND                   | 0.34               | ND                         | ND         | 0.36               | 1.15                  | ND                   | 4.92              |
| V27        | 6.0       | 4.86            | 88.74                  | 0.79               | ND                   | 0.05               | 0.48                       | 0.17       | 0.32               | 0.94                  | ND                   | 5.36              |
| V28        | 6.0       | 4.86            | 88.74                  | 0.28               | ND                   | 0.05               | 0.11                       | ND         | 0.26               | 0.63                  | ND                   | 9.57              |
| V29        | 24.5      | 3.91            | 104.95                 | 0.56               | ND                   | 0.05               | 0.23                       | ND         | 0.28               | 0.77                  | ND                   | 9.05              |
| V210       | 24.5      | 3.91            | 104.95                 | 0.66               | ND                   | 0.07               | 0.07                       | ND         | 0.28               | 0.77                  | ND                   | 9.05              |
| Mean       |           |                 |                        | 0.81               | 0.00                 | 0.10               | 0.13                       | 0.04       | 0.70               | 1.74                  | 0.00                 | 6.76              |
| Std dev    |           |                 |                        | 0.29               | 0.00                 | 0.05               | 0.19                       | 0.07       | 0.41               | 0.78                  | 0.00                 | 2.78              |

<sup>a</sup> Not detected

| Sample no. | Tetra-chloroethylene | Chloro-benzene | 1,2-Dichloro-benzene | 1,3-Dichloro-benzene | 1,4-Dichloro-benzene | Benzene | Toluene | Ethyl-benzene | m-Xylene | o- & p-Xylene |
|------------|----------------------|----------------|----------------------|----------------------|----------------------|---------|---------|---------------|----------|---------------|
| V21        | ND                   | ND             | ND                   | ND                   | ND                   | 2.72    | 14.24   | ND            | ND       | ND            |
| V22        | ND                   | ND             | ND                   | ND                   | ND                   | 1.65    | 9.63    | ND            | ND       | ND            |
| V23        | ND                   | ND             | ND                   | ND                   | ND                   | 1.09    | 6.33    | ND            | ND       | ND            |
| V24        | ND                   | ND             | ND                   | ND                   | ND                   | 1.36    | 4.19    | ND            | ND       | ND            |
| V25        | ND                   | ND             | ND                   | ND                   | ND                   | 1.41    | 7.34    | ND            | ND       | ND            |
| V26        | ND                   | ND             | ND                   | ND                   | ND                   | 1.33    | 4.55    | ND            | ND       | ND            |
| V27        | ND                   | ND             | ND                   | ND                   | ND                   | 1.50    | 2.60    | ND            | ND       | ND            |
| V28        | ND                   | ND             | ND                   | ND                   | ND                   | ND      | 1.67    | ND            | ND       | ND            |
| V29        | ND                   | ND             | ND                   | ND                   | ND                   | ND      | 1.37    | ND            | ND       | ND            |
| V210       | ND                   | ND             | ND                   | ND                   | ND                   | ND      | 1.23    | ND            | ND       | ND            |
| Mean       | 0.00                 | 0.00           | 0.00                 | 0.00                 | 0.00                 | 1.11    | 5.32    | 0.00          | 0.00     | 0.00          |
| Std dev    | 0.00                 | 0.00           | 0.00                 | 0.00                 | 0.00                 | 0.83    | 3.98    | 0.00          | 0.00     | 0.00          |

Table A12 Time series data for V2D, June 1987 (concentrations in µg/L).

| Sample no. | Time (hr) | Water level (M) | % Water level recovery | Methylene chloride | 1,1-Dichloroethylene | 1,1-Dichloroethane | Trans-1,2-Dichloroethylene | Chloroform | Dichloroethane | 1,2-Dichloroethane | 1,1,1-Trichloroethane | Carbon tetrachloride | Trichloroethylene |
|------------|-----------|-----------------|------------------------|--------------------|----------------------|--------------------|----------------------------|------------|----------------|--------------------|-----------------------|----------------------|-------------------|
| V31        | 0.0       | 4.09            | 0.00                   | 0.41               | ND <sup>a</sup>      | 0.07               | 0.19                       | 0.12       | 0.34           | 0.28               | ND                    | ND                   | 16.74             |
| V32        | 0.0       | 10.06           | 0.00                   | 0.31               | ND                   | 0.06               | 0.25                       | 0.15       | 0.25           | 0.26               | ND                    | ND                   | 10.40             |
| V33        | 1.0       | 5.93            | 69.18                  | 0.61               | ND                   | 0.11               | ND                         | ND         | 0.20           | ND                 | ND                    | ND                   | 3.41              |
| V34        | 1.0       | 5.93            | 69.18                  | 0.31               | ND                   | 0.10               | ND                         | ND         | 0.20           | ND                 | ND                    | ND                   | 2.38              |
| V35        | 2.0       | 5.48            | 76.72                  | 0.80               | ND                   | 0.08               | ND                         | ND         | 0.24           | 0.11               | ND                    | ND                   | 4.93              |
| V36        | 2.0       | 5.48            | 76.72                  | 0.44               | ND                   | 0.06               | ND                         | ND         | 0.22           | 0.08               | ND                    | ND                   | 4.69              |
| V37        | 4.0       | 5.15            | 82.24                  | 0.96               | ND                   | 0.13               | ND                         | ND         | 0.28           | 0.24               | ND                    | ND                   | 4.57              |
| V38        | 4.0       | 5.15            | 82.24                  | 1.09               | ND                   | 0.07               | ND                         | ND         | 0.40           | 0.28               | ND                    | ND                   | 6.41              |
| V39        | 6.0       | 4.93            | 85.93                  | 0.43               | ND                   | 0.07               | 0.13                       | ND         | 0.31           | 0.23               | ND                    | ND                   | 9.54              |
| V310       | 6.0       | 4.93            | 85.93                  | 0.63               | ND                   | 0.06               | 0.15                       | ND         | 0.28           | 0.24               | ND                    | ND                   | 7.79              |
| V311       | 24.0      | 4.25            | 97.32                  | 0.44               | ND                   | 0.07               | 0.17                       | ND         | 0.36           | 0.28               | ND                    | ND                   | 12.19             |
| V312       | 24.0      | 4.25            | 97.32                  | 0.73               | ND                   | 0.07               | 0.14                       | ND         | 0.34           | 0.24               | ND                    | ND                   | 9.49              |
| V313       | 48.0      | 4.14            | 99.16                  | 0.90               | ND                   | 0.07               | 0.20                       | ND         | 0.46           | 0.30               | ND                    | ND                   | 13.60             |
| V314       | 48.0      | 4.14            | 99.16                  | 0.72               | ND                   | 0.07               | 0.19                       | ND         | 0.45           | 0.26               | ND                    | ND                   | 11.05             |
| Mean       |           |                 |                        | 0.63               | 0.00                 | 0.08               | 0.10                       | 0.02       | 0.31           | 0.20               | 0.00                  | 0.00                 | 8.37              |
| Std dev    |           |                 |                        | 0.24               | 0.00                 | 0.02               | 0.09                       | 0.05       | 0.08           | 0.10               | 0.00                  | 0.00                 | 4.06              |

<sup>a</sup> Not detected

| Sample no. | Tetrachloroethylene | Chlorobenzene | 1,2-Dichlorobenzene | 1,3-Dichlorobenzene | 1,4-Dichlorobenzene | Benzene | Toluene | Ethylbenzene | m-Xylene | o- & p-Xylene |
|------------|---------------------|---------------|---------------------|---------------------|---------------------|---------|---------|--------------|----------|---------------|
| V31        | ND                  | ND            | ND                  | ND                  | ND                  | ND      | ND      | ND           | ND       | ND            |
| V32        | ND                  | ND            | ND                  | ND                  | ND                  | ND      | ND      | ND           | ND       | ND            |
| V33        | ND                  | ND            | ND                  | ND                  | ND                  | ND      | 1.70    | ND           | ND       | ND            |
| V34        | ND                  | ND            | ND                  | ND                  | ND                  | ND      | ND      | ND           | ND       | ND            |
| V35        | ND                  | ND            | ND                  | ND                  | ND                  | ND      | ND      | ND           | ND       | ND            |
| V36        | ND                  | ND            | ND                  | ND                  | ND                  | ND      | ND      | ND           | ND       | ND            |
| V37        | ND                  | ND            | ND                  | ND                  | ND                  | ND      | ND      | ND           | ND       | ND            |
| V38        | ND                  | ND            | ND                  | ND                  | ND                  | ND      | ND      | ND           | ND       | ND            |
| V39        | ND                  | ND            | ND                  | ND                  | ND                  | ND      | ND      | ND           | ND       | ND            |
| V310       | ND                  | ND            | ND                  | ND                  | ND                  | ND      | ND      | ND           | ND       | ND            |
| V311       | ND                  | ND            | ND                  | ND                  | ND                  | ND      | ND      | ND           | ND       | ND            |
| V312       | ND                  | ND            | ND                  | ND                  | ND                  | ND      | ND      | ND           | ND       | ND            |
| V313       | ND                  | ND            | ND                  | ND                  | ND                  | ND      | ND      | ND           | ND       | ND            |
| V314       | ND                  | ND            | ND                  | ND                  | ND                  | ND      | ND      | ND           | ND       | ND            |
| Mean       | 0.00                | 0.00          | 0.00                | 0.00                | 0.00                | 0.00    | 0.12    | 0.00         | 0.00     | 0.00          |
| Std dev    | 0.00                | 0.00          | 0.00                | 0.00                | 0.00                | 0.00    | 0.44    | 0.00         | 0.00     | 0.00          |

**Table A13** Time series data for V2M, September 1986 (concentrations in µg/L).

| Sample no. | Time (hr) | Methylene chloride | Chloroform | 1,2-Dichloroethane | 1,1,1-Trichloroethane | Trichloroethylene | Tetrachloroethylene | Benzene | Toluene | Ethylbenzene | o- & p-Xylene |
|------------|-----------|--------------------|------------|--------------------|-----------------------|-------------------|---------------------|---------|---------|--------------|---------------|
| V11-V12    | 0.0       | 480.90             | 161.88     | 103.86             | 327.24                | 686.78            | 30.90               | 158.58  | <0.2    | <0.2         | 289.82        |
| V13        | 1.4       | 648.82             | 157.15     | 88.82              | 351.68                | 632.38            | 26.55               | 148.20  | <0.2    | <0.2         | 286.33        |
| V14        | 3.4       | 356.85             | 158.62     | 104.56             | 345.28                | 697.07            | 48.88               | 160.84  | <0.2    | <0.2         | 270.99        |
| V15        | 4.7       | 423.42             | 159.54     | 109.68             | 351.40                | 718.07            | 59.92               | 172.68  | <0.2    | <0.2         | 335.12        |
| V16        | 20.4      | 386.58             | 162.30     | 113.14             | 360.13                | 729.45            | 60.82               | 176.20  | <0.2    | <0.2         | 318.48        |
| V17        | 27.2      | 222.52             | 161.54     | 114.08             | 349.39                | 730.53            | 59.82               | 172.68  | <0.2    | <0.2         | 324.28        |
| V18        | 45.6      | 570.70             | 158.85     | 110.88             | 344.52                | 703.91            | 48.85               | 158.58  | <0.2    | <0.2         | 309.24        |
| Mean       |           | 441.40             | 159.98     | 106.43             | 353.52                | 699.74            | 47.97               | 163.97  | 0.00    | 0.00         | 304.89        |
| Std dev    |           | 130.76             | 1.80       | 8.05               | 9.01                  | 31.39             | 13.08               | 9.40    | 0.00    | 0.00         | 21.43         |

**Table A14** Time series data for V2M, April 1987 (concentrations in µg/L).

| Sample no. | Time (hr) | Water level (M) | Water level recovery | Methylene chloride | 1,1-Dichloroethylene | 1,1-Dichloroethane | Trans-1,2-Dichloroethylene | Chloroform | 1,2-Dichloroethane | 1,1,1-Trichloroethane | Carbon tetrachloride | Trichloroethylene |
|------------|-----------|-----------------|----------------------|--------------------|----------------------|--------------------|----------------------------|------------|--------------------|-----------------------|----------------------|-------------------|
| V21        | 0.0       | 3.79            | 0.00                 | 20.11              | 44.83                | 23.86              | 127.36                     | 94.03      | 68.77              | 211.36                | ND <sup>a</sup>      | 619.13            |
| V22        | 0.0       | 6.43            | 0.00                 | 22.61              | 51.61                | 28.95              | 126.14                     | 117.53     | 57.63              | 182.40                | ND                   | 754.29            |
| V23        | 2.0       | 6.43            | 86.36                | 16.95              | 61.29                | 23.86              | 154.08                     | 101.63     | 62.11              | 280.24                | ND                   | 727.73            |
| V24        | 2.0       | 4.15            | 86.36                | 14.89              | 60.76                | 23.32              | 150.78                     | 100.73     | 60.93              | 269.87                | ND                   | 678.67            |
| V25        | 2.0       | 4.00            | 92.05                | 20.01              | 51.27                | 20.76              | 140.76                     | 96.01      | 55.73              | 248.28                | ND                   | 608.07            |
| V26        | 4.0       | 4.00            | 92.05                | 14.66              | 40.35                | 17.76              | 126.82                     | 91.52      | 49.88              | 250.94                | ND                   | 586.53            |
| V27        | 6.0       | 3.95            | 93.94                | 26.99              | 43.05                | 17.32              | 143.24                     | 95.07      | 56.46              | 256.75                | ND                   | 1010.60           |
| V28        | 6.0       | 3.95            | 93.94                | 19.23              | 56.75                | 21.30              | 145.80                     | 98.64      | 59.85              | 267.08                | ND                   | 680.48            |
| V29        | 24.0      | 3.89            | 96.21                | 19.13              | 52.66                | 21.30              | 144.24                     | 97.91      | 58.63              | 263.93                | ND                   | 671.31            |
| V210       | 24.0      | 3.89            | 96.21                | 20.97              | 53.75                | 21.81              | 145.48                     | 98.42      | 60.34              | 267.11                | ND                   | 682.73            |
| Mean       |           |                 |                      | 19.56              | 51.63                | 22.08              | 140.47                     | 99.15      | 59.03              | 249.80                | 0.00                 | 701.95            |
| Std dev    |           |                 |                      | 3.46               | 6.75                 | 3.14               | 9.65                       | 6.78       | 4.62               | 28.63                 | 0.00                 | 114.01            |

<sup>a</sup> Not detected

| Sample no. | Tetrachloroethylene | Chlorobenzene | 1,2-Dichlorobenzene | 1,3-Dichlorobenzene | 1,4-Dichlorobenzene | Benzene | Toluene | Ethylbenzene | m-Xylene | o- & p-Xylene |
|------------|---------------------|---------------|---------------------|---------------------|---------------------|---------|---------|--------------|----------|---------------|
| V21        | 40.42               | 66.59         | 18.65               | ND                  | 32.05               | 75.15   | 59.64   | ND           | ND       | 75.73         |
| V22        | 34.54               | 72.09         | 23.60               | ND                  | 54.75               | 84.09   | 55.25   | ND           | ND       | 97.33         |
| V23        | 70.24               | 81.28         | 143.61              | ND                  | 166.37              | 83.93   | 15.53   | 42.54        | 17.06    | 413.33        |
| V24        | 70.24               | 89.86         | 145.62              | ND                  | 156.89              | 82.26   | 15.71   | 49.90        | 22.32    | 387.53        |
| V25        | 57.16               | 81.09         | 108.35              | ND                  | 118.32              | 72.31   | 44.52   | 37.26        | 24.33    | 330.03        |
| V26        | 43.95               | 67.86         | 95.41               | ND                  | 96.63               | 60.53   | 37.66   | 38.12        | 23.49    | 327.82        |
| V27        | 34.84               | 52.60         | 80.45               | ND                  | 74.37               | 59.77   | 5.21    | 37.17        | 5.61     | 280.57        |
| V28        | 59.89               | 95.21         | 126.56              | ND                  | 129.11              | 74.71   | 10.22   | 30.26        | 4.22     | 316.81        |
| V29        | 56.38               | 92.42         | 124.01              | ND                  | 113.57              | 72.15   | 15.19   | 33.62        | ND       | 313.92        |
| V210       | 58.33               | 100.80        | 125.61              | ND                  | 125.49              | 72.52   | 14.70   | 39.82        | ND       | 346.75        |
| Mean       | 52.60               | 79.98         | 99.19               | 0.00                | 106.76              | 73.74   | 27.36   | 30.87        | 9.70     | 288.98        |
| Std dev    | 12.68               | 14.35         | 43.41               | 0.00                | 40.66               | 8.14    | 18.94   | 16.20        | 10.20    | 107.41        |

**Table A15** Time series data for V2M, June 1987 (concentrations in µg/L).

| Sample no. | Time<br>level (hr) | Water<br>level (M) | % Water<br>level<br>recovery | Methylene<br>chloride | 1,1-<br>Dichloro-<br>ethylene | 1,1-<br>Dichloro-<br>ethane | Trans-1,2-<br>Dichloro-<br>ethylene | Chloro-<br>form | 1,2-<br>Dichloro-<br>ethane | 1,1,1-<br>Dichloro-<br>ethane | Carbon<br>tetra-<br>chloride | Trichloro-<br>ethylene |
|------------|--------------------|--------------------|------------------------------|-----------------------|-------------------------------|-----------------------------|-------------------------------------|-----------------|-----------------------------|-------------------------------|------------------------------|------------------------|
| V31        | 0.0                | 4.11               | 0.00                         | 23.84                 | 84.27                         | 25.47                       | 279.42                              | 182.11          | 71.38                       | 523.83                        | ND <sup>a</sup>              | 1360.90                |
| V32        | 0.0                | 6.43               | 0.00                         | 23.53                 | 86.85                         | 26.27                       | 293.80                              | 189.13          | 77.02                       | 533.66                        | ND                           | 1394.71                |
| V33        | 2.0                | 4.45               | 85.34                        | 99.96                 | 106.13                        | 28.26                       | 203.41                              | 186.79          | 74.99                       | 549.99                        | ND                           | 1318.44                |
| V34        | 2.0                | 4.45               | 85.34                        | 94.85                 | 80.00                         | 23.70                       | 165.03                              | 168.63          | 68.14                       | 511.52                        | ND                           | 1165.07                |
| V35        | 4.0                | 4.27               | 93.10                        | 160.06                | 101.05                        | 26.80                       | 208.27                              | 182.48          | 74.24                       | 537.45                        | ND                           | 1276.34                |
| V36        | 4.0                | 4.27               | 93.10                        | 145.13                | 99.96                         | 26.22                       | 211.74                              | 182.26          | 74.40                       | 539.02                        | ND                           | 1273.28                |
| V37        | 6.0                | 4.23               | 94.83                        | 138.34                | 76.59                         | 21.36                       | 165.52                              | 157.49          | 61.52                       | 484.34                        | ND                           | 1083.59                |
| V38        | 6.0                | 4.23               | 94.83                        | 120.63                | 39.08                         | 10.38                       | 211.98                              | 152.64          | 69.90                       | 436.15                        | ND                           | 1022.21                |
| V39        | 24.0               | 4.15               | 98.28                        | 120.45                | 51.41                         | 20.08                       | 236.68                              | 153.55          | 64.21                       | 439.15                        | ND                           | 1042.09                |
| V310       | 24.0               | 4.15               | 98.28                        | 113.26                | 70.97                         | 21.53                       | 204.62                              | 145.85          | 71.24                       | 423.06                        | ND                           | 1005.16                |
| V311       | 47.9               | 4.13               | 99.14                        | 116.30                | 47.67                         | 26.41                       | 225.04                              | 150.55          | 69.48                       | 437.78                        | ND                           | 1011.76                |
| V312       | 47.9               | 4.13               | 99.14                        | 172.83                | 49.94                         | 19.32                       | 210.19                              | 148.22          | 60.34                       | 435.80                        | ND                           | 1011.87                |
| Mean       |                    |                    |                              | 110.77                | 74.49                         | 22.98                       | 217.98                              | 166.64          | 69.74                       | 487.65                        | 0.00                         | 1163.79                |
| Std dev    |                    |                    |                              | 44.71                 | 21.91                         | 4.72                        | 36.63                               | 16.15           | 5.14                        | 47.75                         | 0.00                         | 145.31                 |

<sup>a</sup> Not detected

| Sample no. | Tetra-<br>chloro-<br>ethylene | Chloro-<br>benzene | 1,2-<br>Dichloro-<br>benzene | 1,3-<br>Dichloro-<br>benzene | 1,4-<br>Dichloro-<br>benzene | Benzene | Toluene | Ethyl-<br>benzene | m-<br>Xylene | o- & p-<br>Xylene |
|------------|-------------------------------|--------------------|------------------------------|------------------------------|------------------------------|---------|---------|-------------------|--------------|-------------------|
| V31        | 48.25                         | 114.55             | 113.56                       | ND                           | 129.55                       | 94.15   | 26.65   | 9.81              | ND           | 151.92            |
| V32        | 57.57                         | 98.78              | 125.98                       | ND                           | 133.24                       | 98.20   | 27.25   | 9.07              | ND           | 168.82            |
| V33        | 80.96                         | 105.16             | 172.38                       | ND                           | 194.18                       | 104.90  | 5.72    | 20.75             | ND           | 459.34            |
| V34        | 54.79                         | 102.42             | 121.61                       | ND                           | 131.99                       | 84.12   | 4.95    | 14.02             | ND           | 409.59            |
| V35        | 74.64                         | 121.77             | 143.90                       | ND                           | 167.61                       | 92.92   | 5.24    | 23.40             | ND           | 373.17            |
| V36        | 71.49                         | 93.44              | 144.90                       | ND                           | 160.19                       | 93.42   | 3.50    | 26.85             | ND           | 376.36            |
| V37        | 50.80                         | 40.40              | 89.01                        | ND                           | 99.67                        | 65.89   | 3.71    | 15.67             | ND           | 316.68            |
| V38        | 61.00                         | 77.42              | 141.69                       | ND                           | 156.69                       | 93.02   | 6.28    | 29.67             | ND           | 380.23            |
| V39        | 59.54                         | 73.88              | 146.01                       | ND                           | 165.73                       | 100.80  | 6.27    | 24.34             | ND           | 395.73            |
| V310       | 56.23                         | 69.96              | 141.74                       | ND                           | 146.78                       | 91.09   | 6.74    | 25.10             | ND           | 388.10            |
| V311       | 58.03                         | 86.14              | 132.47                       | ND                           | 134.42                       | 93.22   | 6.11    | 22.45             | ND           | 354.82            |
| V312       | 59.83                         | 82.55              | 121.19                       | ND                           | 128.34                       | 89.87   | 6.52    | 20.38             | ND           | 340.77            |
| Mean       | 61.09                         | 88.87              | 132.87                       | 0.00                         | 145.70                       | 91.80   | 9.08    | 20.13             | 0.00         | 342.96            |
| Std dev    | 9.34                          | 21.25              | 19.92                        | 0.00                         | 23.66                        | 9.31    | 8.05    | 6.33              | 0.00         | 88.45             |

**Table A16** Time series data for V2S, September 1986 (concentrations in µg/L) .

| Sample no. | Time (hr) | Methylene chloride | Chloroform | 1,2-Dichloroethane | 1,1,1-Trichloroethane | Trichloroethylene | Tetrachloroethylene | Benzene | Toluene | Ethylbenzene | o-Xylene |
|------------|-----------|--------------------|------------|--------------------|-----------------------|-------------------|---------------------|---------|---------|--------------|----------|
| V11        | 0.0       | 14.26              | 32.11      | 25.96              | 188.30                | 698.55            | 6.49                | <0.2    | <0.2    | <0.2         | <0.2     |
| V12        | 1.3       | 4.56               | 30.12      | 22.85              | 211.37                | 750.38            | 14.78               | <0.2    | <0.2    | <0.2         | <0.2     |
| V14        | 3.4       | 1.93               | 26.38      | 17.93              | 154.02                | 685.92            | 11.88               | <0.2    | <0.2    | <0.2         | <0.2     |
| V15        | 20.4      | 1.83               | 31.92      | 20.22              | 192.14                | 731.94            | 17.84               | <0.2    | <0.2    | <0.2         | <0.2     |
| V16        | 27.2      | 4.37               | 34.66      | 20.64              | 200.27                | 748.38            | 14.39               | <0.2    | <0.2    | <0.2         | <0.2     |
| V17        | 45.5      | 1.95               | 35.95      | 21.44              | 217.03                | 751.34            | 14.25               | <0.2    | <0.2    | <0.2         | <0.2     |
| Sum        |           | 28.90              | 190.96     | 129.04             | 1163.13               | 4366.51           | 74.63               | 0.0     | 0.0     | 0.0          | 0.0      |
| Mean       |           | 4.82               | 31.83      | 21.51              | 193.86                | 727.75            | 12.44               | 0.0     | 0.0     | 0.0          | 0.0      |
| Std dev    |           | 4.38               | 3.15       | 2.48               | 20.44                 | 26.19             | 2.84                | 0.0     | 0.0     | 0.0          | 0.0      |

Table A17 Time series data for V2S, April 1987 (concentrations in µg/L)

| Sample no. | Time (hr) | Water level (M) | % Water level recovery | Methylene chloride | 1,1-Dichloroethylene | 1,1-Dichloroethane | Trans-1,2-Dichloroethylene | Chloroform | 1,2-Dichloroethane | 1,1,1-Trichloroethane | Carbon tetrachloride | Trichloroethylene |
|------------|-----------|-----------------|------------------------|--------------------|----------------------|--------------------|----------------------------|------------|--------------------|-----------------------|----------------------|-------------------|
| V21        | 0.0       | 4.81            | 0.00                   | 4.37               | 13.32                | 8.99               | 142.31                     | 38.98      | 36.39              | 103.58                | ND <sup>a</sup>      | 440.15            |
| V22        | 0.0       | 5.75            | 0.00                   | 3.92               | 12.38                | 8.22               | 77.48                      | 41.73      | 38.05              | 98.98                 | ND                   | 491.09            |
| V23        | 2.0       | 5.75            | 80.85                  | 13.01              | 39.84                | 15.52              | 164.68                     | 33.31      | 49.64              | 212.30                | ND                   | 540.10            |
| V24        | 2.0       | 4.99            | 80.85                  | 21.70              | 24.61                | 13.33              | 159.22                     | 47.30      | 47.16              | 173.93                | ND                   | 556.77            |
| V25        | 4.0       | 4.92            | 88.30                  | 15.75              | 50.67                | 18.48              | 166.72                     | 33.59      | 52.67              | 217.88                | ND                   | 550.96            |
| V26        | 4.0       | 4.92            | 88.30                  | 11.77              | 45.65                | 13.34              | 123.99                     | 39.95      | 34.93              | 197.67                | ND                   | 517.15            |
| V27        | 6.0       | 4.88            | 92.55                  | 15.67              | 46.08                | 16.89              | 148.01                     | 22.02      | 48.26              | 203.84                | ND                   | 504.64            |
| V28        | 6.0       | 4.88            | 92.55                  | 17.13              | 53.24                | 18.30              | 152.20                     | 22.66      | 49.50              | 212.06                | ND                   | 529.07            |
| V29        | 23.2      | 4.81            | 100.00                 | 15.60              | 38.54                | 11.01              | 125.46                     | 20.44      | 42.00              | 191.01                | ND                   | 487.04            |
| V210       | 23.2      | 4.81            | 100.00                 | 14.21              | 36.54                | 12.46              | 91.73                      | 22.80      | 49.38              | 201.22                | ND                   | 418.38            |
| Mean       |           |                 |                        | 13.31              | 35.09                | 13.65              | 135.24                     | 32.28      | 44.80              | 181.25                | 0.00                 | 503.54            |
| Std dev    |           |                 |                        | 5.23               | 14.18                | 3.45               | 28.97                      | 9.22       | 6.06               | 41.69                 | 0.00                 | 43.54             |

<sup>a</sup> Not detected

| Sample no. | Tetrachloroethylene | Chlorobenzene | 1,2-Dichlorobenzene | 1,3-Dichlorobenzene | 1,4-Dichlorobenzene | Benzene | Toluene | Ethylbenzene | m-Xylene | o- & p-Xylene |
|------------|---------------------|---------------|---------------------|---------------------|---------------------|---------|---------|--------------|----------|---------------|
| V21        | 15.02               | 2.11          | 5.92                | ND                  | 7.86                | 2.84    | 6.51    | ND           | ND       | ND            |
| V22        | 12.79               | 1.96          | 7.42                | ND                  | 6.49                | 2.14    | 10.03   | ND           | ND       | ND            |
| V23        | 40.24               | 46.00         | 15.52               | ND                  | 53.41               | 35.02   | 30.79   | 10.93        | ND       | 20.15         |
| V24        | 33.40               | 38.98         | 14.15               | ND                  | 39.18               | 36.62   | 27.71   | 15.68        | ND       | 26.16         |
| V25        | 46.80               | 39.21         | 7.46                | ND                  | 32.31               | 35.11   | 2.47    | 7.65         | ND       | 23.11         |
| V26        | 25.45               | 33.05         | 10.21               | ND                  | 30.58               | 20.73   | 7.49    | 4.77         | ND       | 22.50         |
| V27        | 33.36               | 35.22         | 12.54               | ND                  | 33.60               | 30.77   | 4.07    | 9.94         | ND       | 21.52         |
| V28        | 38.89               | 31.15         | 6.25                | ND                  | 25.44               | 32.39   | 2.86    | 5.66         | ND       | 18.22         |
| V29        | 29.45               | 30.22         | 7.15                | ND                  | 27.75               | 28.34   | ND      | ND           | ND       | ND            |
| V210       | 39.55               | 32.67         | 5.79                | ND                  | 21.62               | 39.04   | ND      | ND           | ND       | ND            |
| Mean       | 31.50               | 29.06         | 9.24                | 0.00                | 27.82               | 26.30   | 9.19    | 5.46         | 0.00     | 13.17         |
| Std dev    | 10.49               | 14.22         | 3.44                | 0.00                | 13.20               | 12.84   | 10.49   | 5.28         | 0.00     | 10.92         |

**Table A18** Time series data for V2S, June 1987 (concentrations in µg/L).

| Sample no. | Time (hr) | Water level (M) | Water level recovery | Methylene chloride | 1,1-Dichloroethylene | 1,1-Dichloroethane | Trans-1,2-Dichloroethylene | Chloroform | 1,2-Dichloroethane | 1,1,1-Trichloroethane | Carbon tetrachloride | Trichloroethylene |
|------------|-----------|-----------------|----------------------|--------------------|----------------------|--------------------|----------------------------|------------|--------------------|-----------------------|----------------------|-------------------|
| V31        | 0.0       | 4.73            | 0.00                 | 1.10               | 17.84                | 9.80               | 14.16                      | 4.74       | 37.34              | 125.39                | ND <sup>a</sup>      | 307.19            |
| V32        | 0.0       | 5.75            | 0.00                 | 1.86               | 19.24                | 10.31              | 14.41                      | 4.81       | 37.59              | 130.39                | ND                   | 318.40            |
| V33        | 2.0       | 4.99            | 74.51                | ND                 | 28.91                | 14.02              | 16.23                      | 5.48       | 44.32              | 147.75                | ND                   | 339.98            |
| V34        | 2.0       | 4.99            | 74.51                | 1.45               | 24.24                | 12.99              | 15.75                      | 5.36       | 42.90              | 140.10                | ND                   | 320.48            |
| V35        | 4.0       | 4.92            | 81.37                | 1.42               | 43.86                | 14.03              | 94.64                      | 49.23      | 43.64              | 137.60                | ND                   | 375.03            |
| V36        | 4.0       | 4.92            | 81.37                | 1.23               | 43.58                | 13.78              | 94.53                      | 49.50      | 43.65              | 140.43                | ND                   | 380.29            |
| V37        | 6.0       | 4.88            | 85.29                | 2.25               | 44.19                | 13.61              | 93.02                      | 48.70      | 43.21              | 139.50                | ND                   | 271.29            |
| V38        | 6.0       | 4.88            | 85.29                | 2.01               | 43.67                | 13.87              | 94.06                      | 49.36      | 44.60              | 140.84                | ND                   | 387.58            |
| V39        | 24.0      | 4.81            | 92.16                | 2.28               | 36.75                | 11.73              | 84.93                      | 45.31      | 38.71              | 132.72                | ND                   | 350.28            |
| V310       | 24.0      | 4.81            | 92.16                | 1.89               | 39.07                | 12.31              | 86.19                      | 46.15      | 39.63              | 135.20                | ND                   | 357.42            |
| V311       | 48.0      | 4.76            | 97.06                | 1.89               | 26.72                | 9.91               | 72.55                      | 40.87      | 34.57              | 122.42                | ND                   | 302.01            |
| V312       | 48.0      | 4.76            | 97.06                | 2.39               | 24.52                | 11.18              | 90.85                      | 64.92      | 39.13              | 121.04                | ND                   | 295.89            |
| Mean       |           |                 |                      | 1.54               | 32.72                | 12.30              | 64.28                      | 34.54      | 40.77              | 134.45                | 0.00                 | 333.65            |
| Std dev    |           |                 |                      | 0.64               | 9.76                 | 1.59               | 35.23                      | 21.49      | 3.20               | 7.89                  | 0.00                 | 35.65             |

<sup>a</sup> Not detected

| Sample no. | Tetra-chloroethylene | Chloro-benzene | 1,2-Dichloro-benzene | 1,3-Dichloro-benzene | 1,4-Dichloro-benzene | Benzene | Toluene | Ethyl-benzene | m-Xylene | o- & p-Xylene |
|------------|----------------------|----------------|----------------------|----------------------|----------------------|---------|---------|---------------|----------|---------------|
| V31        | 20.73                | 1.45           | 5.92                 | ND                   | 4.97                 | 3.0     | 4.66    | ND            | ND       | ND            |
| V32        | 18.98                | 2.24           | 6.51                 | ND                   | 6.32                 | 3.2     | 8.69    | ND            | ND       | ND            |
| V33        | 28.19                | 1.72           | 9.09                 | ND                   | 8.18                 | 34.3    | 1.33    | ND            | ND       | ND            |
| V34        | 22.90                | 1.40           | 9.15                 | ND                   | 9.18                 | 31.6    | 1.00    | ND            | ND       | ND            |
| V35        | 36.79                | 3.28           | 11.65                | ND                   | 10.40                | 37.3    | 2.01    | 0.95          | ND       | 30.55         |
| V36        | 36.32                | 2.72           | 13.21                | ND                   | 9.17                 | 37.5    | 1.47    | 1.24          | ND       | 33.17         |
| V37        | 35.70                | 26.35          | 8.67                 | ND                   | 32.51                | 39.1    | 2.62    | 26.14         | ND       | 44.53         |
| V38        | 36.73                | 23.92          | 12.34                | ND                   | 33.24                | 39.7    | 2.72    | 24.06         | ND       | 38.79         |
| V39        | 31.79                | 35.57          | 17.31                | ND                   | 31.46                | 32.8    | 3.32    | 25.47         | ND       | 57.17         |
| V310       | 35.08                | 38.25          | 14.33                | ND                   | 35.49                | 34.7    | 2.58    | 24.53         | ND       | 41.13         |
| V311       | 22.43                | 35.03          | 15.65                | ND                   | 31.28                | 25.4    | 2.91    | 10.44         | ND       | 11.67         |
| V312       | 42.91                | 42.91          | 12.28                | ND                   | 25.39                | 31.0    | 3.20    | 13.00         | ND       | 7.96          |
| Mean       | 30.71                | 17.90          | 11.34                | 0.00                 | 19.80                | 29.13   | 3.04    | 10.49         | 0.00     | 22.08         |
| Std dev    | 7.48                 | 16.45          | 3.40                 | 0.00                 | 12.04                | 12.24   | 1.95    | 11.08         | 0.00     | 20.06         |

**Table A19** Time series data for V3D, September 1986 (concentrations in µg/L).

| Sample no. | Time (hr) | Methylene chloride | Chloroform | 1,2-Dichloroethane | 1,1,1-Trichloroethane | Trichloroethylene | Tetrachloroethylene | Benzene | Toluene | Ethylbenzene | o-Xylene |
|------------|-----------|--------------------|------------|--------------------|-----------------------|-------------------|---------------------|---------|---------|--------------|----------|
| V11        | 0.0       | 2.10               | 0.97       | 0.60               | 2.27                  | 7.94              | <0.02               | <0.2    | <0.2    | <0.2         | <0.2     |
| V12-V13    | 1.7       | 3.89               | 0.56       | 0.29               | 0.67                  | 3.16              | <0.02               | <0.2    | <0.2    | <0.2         | <0.2     |
| V14        | 3.0       | 6.54               | 0.48       | 0.44               | 0.51                  | 2.94              | <0.02               | <0.2    | <0.2    | <0.2         | <0.2     |
| V15        | 5.2       | 4.92               | 0.53       | 0.37               | 0.66                  | 5.31              | <0.02               | <0.2    | <0.2    | <0.2         | <0.2     |
| V16        | 21.2      | 2.72               | 0.79       | 0.68               | 1.46                  | 13.62             | <0.02               | <0.2    | <0.2    | <0.2         | <0.2     |
| V17        | 28.2      | 1.34               | 1.35       | 0.89               | 2.73                  | 14.50             | <0.02               | <0.2    | <0.2    | <0.2         | <0.2     |
| V18        | 46.4      | 2.50               | 1.13       | 0.73               | 1.85                  | 14.37             | <0.02               | <0.2    | <0.2    | <0.2         | <0.2     |
| Sum        |           | 24.01              | 5.81       | 4.00               | 10.15                 | 61.84             | 0.00                | 0.0     | 0.0     | 0.0          | 0.0      |
| Mean       |           | 3.43               | 0.83       | 0.57               | 1.45                  | 8.83              | 0.00                | 0.0     | 0.0     | 0.0          | 0.0      |
| Std dev    |           | 1.67               | 0.31       | 0.20               | 0.81                  | 4.87              | 0.00                | 0.0     | 0.0     | 0.0          | 0.0      |

**Table A20** Time series data for V3D, April 1987 (concentrations in µg/L).

| Sample no. | Time (hr) | Water level (M) | Water level recovery | Methylene chloride | 1,1-Dichloroethylene | 1,1-Dichloroethane | Trans-1,2-Dichloroethylene | Chloroform | 1,2-Dichloroethane | 1,1,1-Trichloroethane | Carbon tetrachloride | Trichloroethylene |
|------------|-----------|-----------------|----------------------|--------------------|----------------------|--------------------|----------------------------|------------|--------------------|-----------------------|----------------------|-------------------|
| V21        | 0.0       | 5.51            | 0.00                 | 7.47               | ND <sup>a</sup>      | ND                 | ND                         | 0.56       | 0.15               | 1.62                  | ND                   | 3.18              |
| V22        | 0.0       | 12.14           | 0.00                 | 9.67               | ND                   | ND                 | ND                         | 0.39       | 0.12               | 1.84                  | ND                   | 3.96              |
| V23        | 2.0       | 11.91           | 3.47                 | 9.56               | ND                   | ND                 | ND                         | 0.22       | 0.26               | 1.13                  | ND                   | 2.31              |
| V24        | 2.0       | 11.91           | 3.47                 | 6.92               | ND                   | ND                 | ND                         | 0.31       | 0.20               | 1.46                  | ND                   | 3.60              |
| V25        | 4.0       | 11.72           | 6.33                 | 9.73               | ND                   | ND                 | ND                         | 0.24       | 0.12               | 1.50                  | ND                   | 3.26              |
| V26        | 4.0       | 11.72           | 6.33                 | 9.08               | ND                   | ND                 | ND                         | 0.39       | 0.27               | 1.08                  | ND                   | 2.82              |
| V27        | 6.0       | 11.53           | 9.20                 | 7.32               | ND                   | ND                 | ND                         | 0.37       | 0.29               | 2.48                  | ND                   | 2.49              |
| V28        | 6.0       | 11.53           | 9.20                 | 3.54               | ND                   | ND                 | ND                         | 2.65       | 0.14               | 1.81                  | ND                   | 2.99              |
| V29        | 24.0      | 10.72           | 21.42                | 4.68               | ND                   | ND                 | ND                         | 0.17       | 0.04               | 1.35                  | ND                   | 3.32              |
| V210       | 24.0      | 10.72           | 21.42                | 3.29               | ND                   | ND                 | ND                         | 0.15       | 0.03               | 1.36                  | ND                   | 4.64              |
| Mean       |           |                 |                      | 7.13               | 0.00                 | 0.00               | 0.00                       | 0.55       | 0.16               | 1.56                  | 0.00                 | 3.26              |
| Std dev    |           |                 |                      | 2.38               | 0.00                 | 0.00               | 0.00                       | 0.71       | 0.09               | 0.39                  | 0.00                 | 0.65              |

<sup>a</sup> Not detected

| Sample no. | Tetrachloroethylene | Chlorobenzene | 1,2-Dichlorobenzene | 1,3-Dichlorobenzene | 1,4-Dichlorobenzene | Benzene | Toluene | Ethylbenzene | m-Xylene | o- & p-Xylene |
|------------|---------------------|---------------|---------------------|---------------------|---------------------|---------|---------|--------------|----------|---------------|
| V21        | 0.14                | ND            | ND                  | ND                  | ND                  | 0.91    | 4.40    | ND           | ND       | ND            |
| V22        | 0.09                | ND            | ND                  | ND                  | ND                  | ND      | 1.78    | ND           | ND       | ND            |
| V23        | 1.05                | ND            | ND                  | ND                  | ND                  | ND      | 2.12    | ND           | ND       | ND            |
| V24        | 1.31                | ND            | ND                  | ND                  | ND                  | ND      | 2.25    | ND           | ND       | ND            |
| V25        | 1.12                | ND            | ND                  | ND                  | ND                  | ND      | 0.36    | ND           | ND       | ND            |
| V26        | 1.19                | ND            | ND                  | ND                  | ND                  | 1.23    | 1.83    | ND           | ND       | 1.37          |
| V27        | 0.89                | ND            | ND                  | ND                  | ND                  | 1.28    | 2.35    | 1.86         | ND       | ND            |
| V28        | 0.45                | ND            | ND                  | ND                  | ND                  | ND      | 1.54    | ND           | ND       | ND            |
| V29        | ND                  | ND            | ND                  | ND                  | ND                  | ND      | 0.66    | ND           | ND       | ND            |
| V210       | ND                  | ND            | ND                  | ND                  | ND                  | ND      | 1.28    | 1.56         | ND       | ND            |
| Mean       | 0.62                | 0.00          | 0.00                | 0.00                | 0.00                | 0.34    | 1.86    | 0.34         | 0.00     | 0.14          |
| Std dev    | 0.51                | 0.00          | 0.00                | 0.00                | 0.00                | 0.53    | 1.05    | 0.69         | 0.00     | 0.41          |

**Table A21** Time series data for V3D, June 1987 (concentrations in µg/L).

| Sample No. | Time (hr) | Water level (M) | Water level recovery | Methylene chloride | 1,1-Dichloroethylene | 1,1-Dichloroethane | Trans-1,2-Dichloroethylene | Chloroform | 1,2-Dichloroethane | 1,1,1-Trichloroethane | Carbon tetrachloride | Trichloroethylene |
|------------|-----------|-----------------|----------------------|--------------------|----------------------|--------------------|----------------------------|------------|--------------------|-----------------------|----------------------|-------------------|
| V31        | 0.0       | 5.51            | 0.00                 | ND <sup>a</sup>    | ND                   | ND                 | ND                         | ND         | ND                 | ND                    | ND                   | ND                |
| V32        | 0.0       | 12.14           | 0.00                 | ND                 | ND                   | ND                 | ND                         | ND         | ND                 | ND                    | ND                   | ND                |
| V33        | 2.1       | 11.91           | 3.47                 | ND                 | ND                   | ND                 | ND                         | ND         | ND                 | ND                    | ND                   | ND                |
| V34        | 2.1       | 11.91           | 3.47                 | 0.60               | ND                   | ND                 | ND                         | 0.37       | 0.39               | 0.66                  | ND                   | 9.28              |
| V35        | 4.0       | 11.72           | 6.33                 | 0.55               | ND                   | ND                 | ND                         | 0.44       | 0.46               | 0.78                  | ND                   | 11.32             |
| V36        | 4.0       | 11.72           | 6.33                 | 0.99               | ND                   | ND                 | ND                         | 0.36       | 0.38               | 0.62                  | ND                   | 8.25              |
| V37        | 6.0       | 11.53           | 9.20                 | 0.54               | ND                   | ND                 | ND                         | 0.34       | 1.71               | 0.64                  | ND                   | 8.79              |
| V38        | 6.0       | 11.53           | 9.20                 | 1.41               | ND                   | ND                 | ND                         | 0.39       | 1.84               | 0.58                  | ND                   | 8.28              |
| V39        | 23.9      | 10.72           | 21.42                | 1.17               | ND                   | 0.08               | ND                         | 0.83       | 6.17               | 1.22                  | ND                   | 17.04             |
| V310       | 23.9      | 10.72           | 21.42                | 1.43               | ND                   | 0.07               | ND                         | 0.76       | 5.52               | 1.12                  | ND                   | 14.85             |
| V311       | 48.0      | 9.27            | 43.29                | 0.34               | 0.08                 | 0.16               | ND                         | 0.67       | 1.42               | 1.40                  | ND                   | 14.24             |
| V312       | 48.0      | 9.27            | 43.29                | 0.07               | 0.05                 | 0.15               | 0.11                       | 0.67       | 1.53               | 1.79                  | ND                   | 14.94             |
| Mean       |           |                 |                      | 0.59               | 0.30                 | 0.04               | 0.01                       | 0.40       | 1.62               | 0.73                  | 0.00                 | 8.92              |
| Std dev    |           |                 |                      | 0.52               | 0.47                 | 0.06               | 0.03                       | 0.28       | 2.01               | 0.55                  | 0.00                 | 5.85              |

<sup>a</sup> Not detected

| Sample no. | Tetra-chloroethylene | Chloro-benzene | 1,2-Dichloro-benzene | 1,3-Dichloro-benzene | 1,4-Dichloro-benzene | Benzene | Toluene | Ethyl-benzene | m-Xylene | o- & p-Xylene |
|------------|----------------------|----------------|----------------------|----------------------|----------------------|---------|---------|---------------|----------|---------------|
| V31        | ND                   | ND             | ND                   | ND                   | ND                   | ND      | ND      | ND            | ND       | ND            |
| V32        | ND                   | ND             | ND                   | ND                   | ND                   | ND      | ND      | ND            | ND       | ND            |
| V33        | ND                   | ND             | ND                   | ND                   | ND                   | ND      | ND      | ND            | ND       | ND            |
| V34        | ND                   | ND             | ND                   | ND                   | ND                   | ND      | ND      | ND            | ND       | ND            |
| V35        | ND                   | ND             | ND                   | ND                   | ND                   | ND      | ND      | ND            | ND       | ND            |
| V36        | ND                   | ND             | ND                   | ND                   | ND                   | ND      | 1.38    | ND            | ND       | ND            |
| V37        | ND                   | ND             | ND                   | ND                   | ND                   | ND      | ND      | ND            | ND       | ND            |
| V38        | ND                   | ND             | ND                   | ND                   | ND                   | ND      | 1.61    | ND            | ND       | ND            |
| V39        | ND                   | ND             | ND                   | ND                   | ND                   | ND      | 0.41    | ND            | ND       | ND            |
| V310       | ND                   | ND             | ND                   | ND                   | ND                   | ND      | ND      | ND            | ND       | ND            |
| V311       | ND                   | ND             | ND                   | ND                   | ND                   | ND      | ND      | ND            | ND       | ND            |
| V312       | ND                   | ND             | ND                   | ND                   | ND                   | ND      | ND      | ND            | ND       | ND            |
| Mean       | 0.00                 | 0.00           | 0.00                 | 0.00                 | 0.00                 | 0.00    | 0.28    | 0.00          | 0.00     | 0.00          |
| Std dev    | 0.00                 | 0.00           | 0.00                 | 0.00                 | 0.00                 | 0.00    | 0.56    | 0.00          | 0.00     | 0.00          |

Table A22 Time series data for V3S, April 1987 (concentrations in µg/L).

| Sample no. | Time (hr) | Water level (M) | Water level recovery | Methylene chloride | 1,1-Dichloroethylene | 1,1-Dichloroethane | Trans-1,2-Dichloroethylene | Chloroform | 1,2-Dichloroethane | 1,1,1-Trichloroethane | Carbon tetrachloride | Trichloroethylene |
|------------|-----------|-----------------|----------------------|--------------------|----------------------|--------------------|----------------------------|------------|--------------------|-----------------------|----------------------|-------------------|
| V21        | 0.0       | 4.93            | 0.00                 | 0.49               | ND <sup>a</sup>      | ND                 | ND                         | 0.47       | 0.03               | 3.37                  | ND                   | 35.01             |
| V22        | 0.0       | 5.97            | 0.00                 | 0.92               | ND                   | ND                 | ND                         | 0.72       | 0.10               | 3.45                  | ND                   | 30.75             |
| V23        | 2.0       | 5.79            | 17.31                | 10.42              | ND                   | ND                 | ND                         | 2.88       | 1.52               | 9.19                  | ND                   | 63.04             |
| V24        | 2.0       | 5.79            | 17.31                | 2.42               | ND                   | ND                 | ND                         | 1.98       | 1.17               | 12.89                 | ND                   | 64.62             |
| V25        | 4.0       | 5.71            | 25.00                | 6.66               | ND                   | ND                 | ND                         | 2.20       | 1.24               | 9.48                  | ND                   | 66.53             |
| V26        | 4.0       | 5.71            | 25.00                | 5.60               | ND                   | ND                 | ND                         | 2.89       | 1.59               | 9.98                  | ND                   | 67.15             |
| V27        | 6.0       | 5.67            | 28.85                | 4.07               | ND                   | ND                 | ND                         | 0.81       | 1.13               | 7.22                  | ND                   | 61.74             |
| V28        | 6.0       | 5.67            | 28.85                | 1.04               | ND                   | ND                 | ND                         | 0.97       | 0.98               | 8.99                  | ND                   | 66.25             |
| V29        | 23.3      | 5.34            | 60.58                | 2.49               | ND                   | ND                 | ND                         | 2.00       | 0.83               | 8.20                  | ND                   | 44.79             |
| Mean       |           |                 |                      | 3.79               | 0.00                 | 0.00               | 0.00                       | 1.66       | 0.95               | 8.09                  | 0.00                 | 55.54             |
| Std dev    |           |                 |                      | 3.09               | 0.00                 | 0.00               | 0.00                       | 0.88       | 0.53               | 2.89                  | 0.00                 | 13.74             |

<sup>a</sup> Not detected

| Sample no. | Tetra-chloroethylene | Chloro-benzene | 1,2-Dichloro-benzene | 1,3-Dichloro-benzene | 1,4-Dichloro-benzene | Benzene | Toluene | Ethyl-benzene | m-Xylene | o- & p-Xylene |
|------------|----------------------|----------------|----------------------|----------------------|----------------------|---------|---------|---------------|----------|---------------|
| V21        | 0.05                 | ND             | ND                   | ND                   | ND                   | ND      | ND      | ND            | ND       | ND            |
| V22        | 0.02                 | ND             | ND                   | ND                   | ND                   | ND      | 1.12    | ND            | ND       | ND            |
| V23        | 0.07                 | ND             | ND                   | ND                   | ND                   | 0.21    | 0.21    | ND            | ND       | ND            |
| V24        | 0.07                 | ND             | ND                   | ND                   | ND                   | 9.91    | 9.91    | ND            | ND       | ND            |
| V25        | ND                   | ND             | ND                   | ND                   | ND                   | 1.29    | 1.29    | ND            | ND       | ND            |
| V26        | ND                   | ND             | ND                   | ND                   | ND                   | 0.19    | 0.19    | ND            | ND       | ND            |
| V27        | ND                   | ND             | ND                   | ND                   | ND                   | 0.95    | 0.95    | ND            | ND       | ND            |
| V28        | ND                   | ND             | ND                   | ND                   | ND                   | 0.29    | 0.29    | ND            | ND       | ND            |
| V29        | ND                   | ND             | ND                   | ND                   | ND                   |         |         | ND            | ND       | ND            |
| Mean       | 0.02                 | 0.00           | 0.00                 | 0.00                 | 0.00                 | 0.10    | 1.55    | 0.00          | 0.00     | 0.00          |
| Std dev    | 0.03                 | 0.00           | 0.00                 | 0.00                 | 0.00                 | 0.29    | 2.99    | 0.00          | 0.00     | 0.00          |

**Table A23** Time series data for V3S, June 1987 (concentrations in  $\mu\text{g/L}$ )

| Sample no. | Time (hr) | Water level (M) | Water level recovery | Methylene chloride | 1,1-Dichloroethylene | 1,1-Dichloroethane | Trans-1,2-Dichloroethylene | Chloroform | 1,2-Dichloroethane | 1,1,1-Trichloroethane | Carbon tetrachloride | Trichloroethylene |
|------------|-----------|-----------------|----------------------|--------------------|----------------------|--------------------|----------------------------|------------|--------------------|-----------------------|----------------------|-------------------|
| V31        | 0.0       | 5.15            | 0.00                 | 0.26               | ND <sup>a</sup>      | 0.24               | 0.16                       | 2.98       | 0.60               | 10.03                 | ND                   | 79.87             |
| V32        | 0.0       | 5.97            | 0.00                 | 0.22               | ND                   | 0.25               | 0.18                       | 3.19       | 0.05               | 11.58                 | ND                   | 77.64             |
| V33        | 2.0       | 5.84            | 15.85                | 0.35               | ND                   | 0.11               | ND                         | 1.78       | 0.80               | 6.50                  | ND                   | 69.53             |
| V34        | 2.0       | 5.84            | 15.85                | 0.27               | ND                   | 0.07               | ND                         | 1.46       | 0.78               | 5.12                  | ND                   | 64.24             |
| V35        | 4.0       | 5.77            | 24.39                | 0.55               | ND                   | 0.18               | 0.12                       | 2.22       | 1.43               | 8.64                  | ND                   | 73.12             |
| V36        | 4.0       | 5.77            | 24.39                | 0.35               | ND                   | 0.25               | 0.19                       | 3.23       | ND                 | 11.73                 | ND                   | 79.14             |
| V37        | 6.0       | 5.72            | 30.49                | 0.27               | ND                   | 0.26               | 0.18                       | 3.30       | 0.69               | 10.72                 | ND                   | 88.33             |
| V38        | 6.0       | 5.72            | 30.49                | 0.40               | ND                   | 0.16               | 0.12                       | 2.65       | 0.60               | 8.32                  | ND                   | 76.75             |
| V39        | 24.0      | 5.36            | 74.39                | 0.27               | 0.19                 | 0.33               | 0.22                       | 3.56       | 0.94               | 11.83                 | ND                   | 84.99             |
| V310       | 24.0      | 5.36            | 74.39                | 0.64               | 0.10                 | 0.30               | 0.18                       | 3.35       | 0.85               | 10.93                 | ND                   | 82.81             |
| V311       | 48.0      | 5.33            | 78.05                | 0.52               | 0.18                 | 0.30               | 0.22                       | 3.74       | 0.94               | 12.46                 | ND                   | 86.35             |
| V312       | 48.0      | 5.33            | 78.05                | 0.82               | 0.09                 | 0.23               | 0.13                       | 3.20       | 0.97               | 10.46                 | ND                   | 80.94             |
| Mean       |           |                 |                      | 0.45               | 0.06                 | 0.23               | 0.14                       | 2.89       | 0.72               | 9.86                  | 0.00                 | 78.64             |
| Std dev    |           |                 |                      | 0.18               | 0.08                 | 0.08               | 0.07                       | 0.69       | 0.37               | 2.18                  | 0.00                 | 6.73              |

<sup>a</sup> Not detected

| Sample no. | Tetrachloroethylene | Chlorobenzene | 1,2-Dichlorobenzene | 1,3-Dichlorobenzene | 1,4-Dichlorobenzene | Benzene | Toluene | Ethylbenzene | m-Xylene | o- & p-Xylene |
|------------|---------------------|---------------|---------------------|---------------------|---------------------|---------|---------|--------------|----------|---------------|
| V31        | ND                  | ND            | ND                  | ND                  | ND                  | ND      | ND      | ND           | ND       | ND            |
| V32        | ND                  | ND            | ND                  | ND                  | ND                  | ND      | ND      | ND           | ND       | ND            |
| V33        | ND                  | ND            | ND                  | ND                  | ND                  | ND      | ND      | ND           | ND       | ND            |
| V34        | ND                  | ND            | ND                  | ND                  | ND                  | ND      | ND      | ND           | ND       | ND            |
| V35        | ND                  | ND            | ND                  | ND                  | ND                  | ND      | ND      | ND           | ND       | ND            |
| V36        | ND                  | ND            | ND                  | ND                  | ND                  | ND      | ND      | ND           | ND       | ND            |
| V37        | ND                  | ND            | ND                  | ND                  | ND                  | ND      | 1.65    | ND           | ND       | ND            |
| V38        | ND                  | ND            | ND                  | ND                  | ND                  | ND      | 0.96    | ND           | ND       | ND            |
| V39        | ND                  | ND            | ND                  | ND                  | ND                  | ND      | ND      | ND           | ND       | ND            |
| V310       | ND                  | ND            | ND                  | ND                  | ND                  | ND      | ND      | ND           | ND       | ND            |
| V311       | ND                  | ND            | ND                  | ND                  | ND                  | ND      | ND      | ND           | ND       | ND            |
| V312       | ND                  | ND            | ND                  | ND                  | ND                  | ND      | ND      | ND           | ND       | ND            |
| Mean       | 0.00                | 0.00          | 0.00                | 0.00                | 0.00                | 0.00    | 0.22    | 0.00         | 0.00     | 0.00          |
| Std dev    | 0.00                | 0.00          | 0.00                | 0.00                | 0.00                | 0.00    | 0.51    | 0.00         | 0.00     | 0.00          |

**Table A24** Time series data for V4D, September 1986 (concentrations in µg/L).

| Sample no. | Time (hr) | Methylene chloride | Chloroform | 1,2-Dichloroethane | 1,1,1-Trichloroethane | Trichloroethylene | Tetrachloroethylene | Benzene | Toluene | Ethylbenzene | o- & p-Xylene |
|------------|-----------|--------------------|------------|--------------------|-----------------------|-------------------|---------------------|---------|---------|--------------|---------------|
| V11        | 0.0       | <0.02              | <0.03      | <0.03              | <0.02                 | <0.02             | <0.02               | <0.2    | <0.2    | <0.2         | <0.2          |
| V12        | 1.5       | <0.02              | <0.03      | <0.03              | <0.02                 | <0.02             | <0.02               | <0.2    | <0.2    | <0.2         | <0.2          |
| V13        | 2.7       | <0.02              | <0.03      | <0.03              | <0.02                 | <0.02             | <0.02               | <0.2    | <0.2    | <0.2         | <0.2          |
| V14        | 7.8       | <0.02              | <0.03      | <0.03              | <0.02                 | <0.02             | <0.02               | <0.2    | <0.2    | <0.2         | <0.2          |
| V15        | 23.6      | <0.02              | <0.03      | <0.03              | <0.02                 | <0.02             | <0.02               | <0.2    | <0.2    | <0.2         | <0.2          |
| V16        | 23.8      | <0.02              | <0.03      | <0.03              | <0.02                 | <0.02             | <0.02               | <0.2    | <0.2    | <0.2         | <0.2          |
| V17        | 30.7      | <0.02              | <0.03      | <0.03              | <0.02                 | <0.02             | <0.02               | <0.2    | <0.2    | <0.2         | <0.2          |
| V18        | 48.9      | <0.02              | <0.03      | <0.03              | <0.02                 | <0.02             | <0.02               | <0.2    | <0.2    | <0.2         | <0.2          |
| Mean       |           | 0.00               | 0.00       | 0.00               | 0.00                  | 0.00              | 0.00                | 0.00    | 0.00    | 0.00         | 0.00          |
| Std dev    |           | 0.00               | 0.00       | 0.00               | 0.00                  | 0.00              | 0.00                | 0.00    | 0.00    | 0.00         | 0.00          |

**Table A25** Time series data for WLM, April 1987 (concentrations in µg/L).

| Sample no. | Time (hr) | Water level (M) | % Water level recovery | Methylene chloride | 1,1-Dichloro-ethylene | 1,1-Dichloro-ethane | Trans-1,2-Dichloro-ethylene | Chloroform | Dichloro-ethane | 1,1,1-Trichloro-ethane | Carbon tetrachloride | Trichloro-ethylene |
|------------|-----------|-----------------|------------------------|--------------------|-----------------------|---------------------|-----------------------------|------------|-----------------|------------------------|----------------------|--------------------|
| V21        | 0.0       | 3.17            | 0.00                   | 31.65              | ND <sup>a</sup>       | 0.23                | ND                          | 138.64     | ND              | ND                     | 122.31               | 21.25              |
| V22        | 0.0       | 6.56            | 0.00                   | 21.89              | ND                    | 0.20                | ND                          | 136.21     | ND              | ND                     | 127.33               | 10.20              |
| V23        | 2.5       | 5.90            | 19.47                  | 25.67              | ND                    | 0.49                | ND                          | 203.20     | ND              | ND                     | 373.41               | 22.39              |
| V24        | 2.5       | 5.90            | 19.47                  | 23.34              | ND                    | 0.52                | ND                          | 204.76     | ND              | ND                     | 371.33               | 21.15              |
| V25        | 4.5       | 5.48            | 31.86                  | 24.61              | ND                    | 0.53                | ND                          | 204.15     | ND              | ND                     | 366.00               | 23.63              |
| V26        | 6.0       | 5.42            | 33.63                  | 32.53              | ND                    | 1.19                | ND                          | 222.30     | ND              | ND                     | 408.75               | 72.27              |
| Mean       |           |                 |                        | 26.62              | 0.00                  | 0.53                | 0.00                        | 184.88     | 0.00            | 0.00                   | 294.86               | 28.48              |
| Std dev    |           |                 |                        | 4.05               | 0.00                  | 0.32                | 0.00                        | 34.18      | 0.00            | 0.00                   | 121.03               | 20.08              |

<sup>a</sup> Not detected

| Sample no. | Tetra-chloro-ethylene | Chloro-benzene | 1,2-Dichloro-benzene | 1,3-Dichloro-benzene | 1,4-Dichloro-benzene | Benzene | Toluene | Ethyl-benzene | m-Xylene | o- & p-Xylene |
|------------|-----------------------|----------------|----------------------|----------------------|----------------------|---------|---------|---------------|----------|---------------|
| V21        | 0.76                  | ND             | ND                   | ND                   | ND                   | ND      | ND      | ND            | ND       | ND            |
| V22        | 0.79                  | ND             | ND                   | ND                   | ND                   | ND      | ND      | ND            | ND       | ND            |
| V23        | 19.50                 | ND             | ND                   | ND                   | ND                   | ND      | ND      | ND            | ND       | 15.21         |
| V24        | 66.92                 | ND             | ND                   | ND                   | ND                   | ND      | ND      | ND            | ND       | 16.13         |
| V25        | 14.98                 | ND             | ND                   | ND                   | ND                   | ND      | 9.99    | ND            | ND       | 12.58         |
| V26        | 66.22                 | ND             | ND                   | ND                   | ND                   | ND      |         | ND            | ND       | 13.22         |
| Mean       | 28.20                 | 0.00           | 0.00                 | 0.00                 | 0.00                 | 0.00    | 1.67    | 0.00          | 0.00     | 9.52          |
| Std dev    | 27.99                 | 0.00           | 0.00                 | 0.00                 | 0.00                 | 0.00    | 3.72    | 0.00          | 0.00     | 6.84          |

Table A26 Time series data for WIM, June 1987 (concentrations in µg/L).

| Sample no. | Time (hr) | Water level (M) | Water recovery | Methylene chloride | 1,1-Dichloroethylene | 1,1-Dichloroethane | Trans-1,2-Dichloroethylene | Chloroform | 1,2-Dichloroethane | 1,1,1-Trichloroethane | Carbon tetrachloride | Trichloroethylene |
|------------|-----------|-----------------|----------------|--------------------|----------------------|--------------------|----------------------------|------------|--------------------|-----------------------|----------------------|-------------------|
| V31        | 0.0       | 4.27            | 0.00           | 29.13              | ND <sup>a</sup>      | 0.76               | ND                         | 223.66     | ND                 | ND                    | 481.14               | 15.94             |
| V32        | 0.0       | 6.56            | 0.00           | 38.63              | ND                   | 0.86               | ND                         | 230.48     | ND                 | ND                    | 490.31               | 16.89             |
| V33        | 2.5       | 5.95            | 26.64          | 28.73              | ND                   | 0.57               | ND                         | 277.61     | ND                 | ND                    | 496.22               | 11.90             |
| V34        | 2.5       | 5.95            | 26.64          | 32.32              | ND                   | 0.60               | ND                         | 282.14     | ND                 | ND                    | 452.31               | 15.48             |
| V35        | 4.5       | 5.91            | 28.38          | 31.53              | ND                   | 0.75               | ND                         | 294.09     | ND                 | ND                    | 494.83               | 36.42             |
| V36        | 4.5       | 5.91            | 28.38          | 46.85              | ND                   | 0.70               | ND                         | 290.36     | ND                 | ND                    | 491.75               | 37.74             |
| V37        | 6.0       | 5.91            | 28.38          | 40.95              | ND                   | 0.81               | ND                         | 299.55     | ND                 | ND                    | 538.11               | 18.05             |
| V38        | 6.0       | 5.91            | 28.38          | 45.51              | ND                   | 0.72               | ND                         | 290.40     | ND                 | ND                    | 513.19               | 19.02             |
| V39        | 7.5       | 5.80            | 33.19          | 34.41              | ND                   | 0.79               | ND                         | 331.43     | ND                 | ND                    | 593.25               | 22.84             |
| V310       | 7.5       | 5.80            | 33.19          | 43.73              | ND                   | 0.83               | ND                         | 329.58     | ND                 | ND                    | 568.93               | 24.72             |
| V311       | 24.0      | 4.57            | 86.90          | 42.12              | ND                   | 0.79               | ND                         | 334.89     | ND                 | ND                    | 589.24               | 25.00             |
| V312       | 24.0      | 4.57            | 86.90          | 35.54              | ND                   | 0.82               | ND                         | 326.49     | ND                 | ND                    | 585.19               | 20.49             |
| Mean       |           |                 |                | 37.45              | 0.00                 | 0.75               | 0.00                       | 318.72     | 0.00               | 0.00                  | 564.65               | 21.69             |
| Std dev    |           |                 |                | 6.11               | 0.00                 | 0.09               | 0.00                       | 17.18      | 0.00               | 0.00                  | 29.48                | 2.69              |

<sup>a</sup> Not detected

| Sample no. | Tetra-chloro-ethylene | Chloro-benzene | 1,2-Dichloro-benzene | 1,3-Dichloro-benzene | 1,4-Dichloro-benzene | Benzene | Toluene | Ethyl-benzene | m-Xylene | o- & p-Xylene |
|------------|-----------------------|----------------|----------------------|----------------------|----------------------|---------|---------|---------------|----------|---------------|
| V31        | 5.39                  | ND             | ND                   | ND                   | ND                   | ND      | 9.25    | ND            | ND       | 238.15        |
| V32        | 5.71                  | ND             | ND                   | ND                   | ND                   | ND      | 11.68   | ND            | ND       | 353.45        |
| V33        | 13.97                 | ND             | ND                   | ND                   | ND                   | ND      | ND      | ND            | ND       | ND            |
| V34        | 10.45                 | ND             | ND                   | ND                   | ND                   | ND      | ND      | ND            | ND       | ND            |
| V35        | 49.39                 | ND             | ND                   | ND                   | ND                   | ND      | ND      | ND            | ND       | ND            |
| V36        | 45.06                 | ND             | ND                   | ND                   | ND                   | ND      | ND      | ND            | ND       | ND            |
| V37        | 64.15                 | ND             | ND                   | ND                   | ND                   | ND      | ND      | ND            | ND       | ND            |
| V38        | 58.89                 | ND             | ND                   | ND                   | ND                   | ND      | ND      | ND            | ND       | ND            |
| V39        | 107.23                | ND             | ND                   | ND                   | ND                   | ND      | ND      | ND            | ND       | 318.35        |
| V310       | 111.16                | ND             | ND                   | ND                   | ND                   | ND      | ND      | ND            | ND       | 301.64        |
| V311       | 113.89                | ND             | ND                   | ND                   | ND                   | ND      | ND      | ND            | ND       | 411.27        |
| V312       | 91.99                 | ND             | ND                   | ND                   | ND                   | ND      | 1.00    | ND            | ND       | 401.45        |
| Mean       | 91.22                 | 0.00           | 0.00                 | 0.00                 | 0.00                 | 0.00    | 1.83    | 0.00          | 0.00     | 168.69        |
| Std dev    | 22.16                 | 0.00           | 0.00                 | 0.00                 | 0.00                 | 0.00    | 3.90    | 0.00          | 0.00     | 173.88        |

**Table A27** Time series data for W2D, September, 1986 (concentrations in  $\mu\text{g/L}$ ).

| Sample no. | Time<br>(hr) | Methylene<br>chloride | Chloro-<br>form | 1,2-<br>chloro-<br>ethane | Carbon<br>tetra-<br>chloride | 1,1,1-<br>trichloro-<br>ethane | Trichloro-<br>ethylene | Tetrachloro-<br>ethylene |
|------------|--------------|-----------------------|-----------------|---------------------------|------------------------------|--------------------------------|------------------------|--------------------------|
| V12        | 1.0          | <0.02                 | 14.15           | <0.03                     | 1.66                         | 0.35                           | 8.75                   | <0.02                    |
| V13        | 1.0          | <0.02                 | 19.32           | <0.03                     | 0.76                         | 0.32                           | 7.98                   | <0.02                    |
| V14        | 22.5         | <0.02                 | 38.96           | <0.03                     | 2.71                         | 1.02                           | 10.68                  | <0.02                    |
| Mean       |              | 0.00                  | 24.14           | 0.00                      | 1.71                         | 0.56                           | 9.14                   | 0.00                     |
| Std dev    |              | 0.00                  | 10.69           | 0.00                      | 0.80                         | 0.32                           | 1.14                   | 0.00                     |

**Table A28** Time series data for W2D, April 1987 (concentrations in µg/L).

| Sample no. | Time (hr) | Water level (M) | Water level recovery | Methylene chloride | 1,1-Dichloro-ethylene | 1,1-Dichloro-ethane | Trans-1,2-Dichloro-ethylene | Chloroform | 1,2-Dichloro-ethane | 1,1,1-Trichloro-ethane | Carbon tetrachloride | Trichloro-ethylene |
|------------|-----------|-----------------|----------------------|--------------------|-----------------------|---------------------|-----------------------------|------------|---------------------|------------------------|----------------------|--------------------|
| V21        | 0.0       | 3.06            | 0.00                 | 2.03               | ND <sup>a</sup>       | 0.19                | ND                          | 3.04       | 0.04                | ND                     | 0.28                 | 2.57               |
| V22        | 0.0       | 12.65           | 0.00                 | 2.11               | ND                    | 0.23                | ND                          | 2.65       | 0.33                | ND                     | 0.32                 | 2.39               |
| V23        | 2.5       | 12.65           | 8.97                 | 4.15               | ND                    | 0.11                | ND                          | 5.61       | ND                  | 0.07                   | 0.70                 | 1.08               |
| V24        | 4.5       | 11.79           | 9.59                 | 6.98               | ND                    | 0.11                | ND                          | 6.42       | ND                  | 0.19                   | 1.08                 | 0.97               |
| V25        | 6.0       | 11.73           | 11.47                | 3.24               | ND                    | 0.06                | ND                          | 3.10       | ND                  | ND                     | 0.11                 | 0.52               |
| Mean       |           | 11.55           |                      | 3.70               | 0.00                  | 0.14                | 0.00                        | 4.16       | 0.07                | 0.05                   | 0.50                 | 1.51               |
| Std dev    |           |                 |                      | 1.82               | 0.00                  | 0.06                | 0.00                        | 1.54       | 0.13                | 0.07                   | 0.35                 | 0.82               |

<sup>a</sup> Not detected

| Sample no. | Tetra-chloro-ethylene | Chloro-benzene | 1,2-Dichloro-benzene | 1,3-Dichloro-benzene | 1,4-Dichloro-benzene | Benzene | Toluene | Ethyl-benzene | m-Xylene | o- & p-Xylene |
|------------|-----------------------|----------------|----------------------|----------------------|----------------------|---------|---------|---------------|----------|---------------|
| V21        | 0.6                   | ND             | ND                   | ND                   | ND                   | ND      | ND      | ND            | ND       | ND            |
| V22        | 0.53                  | ND             | ND                   | ND                   | ND                   | ND      | ND      | ND            | ND       | ND            |
| V23        | 0.38                  | ND             | ND                   | ND                   | ND                   | ND      | ND      | ND            | ND       | ND            |
| V24        | 0.29                  | ND             | ND                   | ND                   | ND                   | ND      | ND      | ND            | ND       | ND            |
| V25        | 0.19                  | ND             | ND                   | ND                   | ND                   | ND      | ND      | ND            | ND       | ND            |
| Mean       | 0.40                  | 0.00           | 0.00                 | 0.00                 | 0.00                 | 0.00    | 0.00    | 0.00          | 0.00     | 0.00          |
| Std dev    | 0.15                  | 0.00           | 0.00                 | 0.00                 | 0.00                 | 0.00    | 0.00    | 0.00          | 0.00     | 0.00          |

**Table A29** Time series data for W2D, June 1987 (concentrations in µg/L).

| Sample no. | Time (hr) | Water level (M) | % Water level recovery | Methylene chloride | 1,1-Dichloroethylene | 1,1-Dichloroethane | Trans-1,2-Dichloroethylene | Chloroform | 1,2-Dichloroethane | 1,1,1-Trichloroethane | Carbon tetrachloride | Trichloroethylene |
|------------|-----------|-----------------|------------------------|--------------------|----------------------|--------------------|----------------------------|------------|--------------------|-----------------------|----------------------|-------------------|
| V31        | 0.0       | 3.93            | 0.00                   | 5.41               | ND <sup>a</sup>      | 0.36               | ND                         | 59.96      | ND                 | ND                    | 30.51                | 2.25              |
| V32        | 0.0       | 12.65           | 0.00                   | 6.21               | ND                   | 0.35               | ND                         | 60.06      | ND                 | ND                    | 31.84                | 2.96              |
| V33        | 2.5       | 12.2            | 5.16                   | 1.47               | ND                   | 0.08               | ND                         | 36.70      | ND                 | ND                    | 4.54                 | 6.32              |
| V34        | 2.5       | 12.2            | 5.16                   | 1.00               | ND                   | 0.09               | ND                         | 34.89      | ND                 | ND                    | 4.31                 | 4.99              |
| V35        | 4.5       | 12.17           | 5.50                   | 1.03               | ND                   | 0.12               | ND                         | 32.82      | ND                 | ND                    | 3.97                 | 5.64              |
| V36        | 4.5       | 12.17           | 5.50                   | 1.76               | ND                   | 0.14               | ND                         | 33.96      | ND                 | ND                    | 4.15                 | 7.32              |
| V37        | 6.0       | 12.09           | 6.42                   | 0.99               | ND                   | 0.17               | ND                         | 38.20      | ND                 | ND                    | 7.54                 | 1.78              |
| V39        | 7.5       | 12.00           | 7.45                   | 1.25               | ND                   | 0.18               | ND                         | 41.07      | ND                 | ND                    | 10.07                | 2.16              |
| V310       | 7.5       | 12.00           | 7.45                   | 1.03               | ND                   | 0.17               | ND                         | 41.39      | ND                 | ND                    | 9.68                 | 1.61              |
| V311       | 24.0      | 9.24            | 39.11                  | 2.00               | ND                   | 0.21               | ND                         | 46.20      | ND                 | ND                    | 9.88                 | 4.38              |
| V312       | 24.0      | 9.24            | 39.11                  | 2.09               | ND                   | 0.26               | ND                         | 47.99      | ND                 | ND                    | 11.08                | 2.39              |
| Mean       |           |                 |                        | 1.32               | 0.00                 | 0.18               | 0.00                       | 43.02      | 0.00               | 0.00                  | 11.60                | 3.80              |
| Std dev    |           |                 |                        | 0.41               | 0.00                 | 0.02               | 0.00                       | 9.21       | 0.00               | 0.00                  | 9.58                 | 1.92              |

<sup>a</sup> Not detected

| Sample no. | Tetra-chloroethylene | Chloro-benzene | 1,2-Dichloro-benzene | 1,3-Dichloro-benzene | 1,4-Dichloro-benzene | Benzene | Toluene | Ethyl-benzene | m-Xylene | o- & p-Xylene |
|------------|----------------------|----------------|----------------------|----------------------|----------------------|---------|---------|---------------|----------|---------------|
| V31        | 1.85                 | ND             | ND                   | ND                   | ND                   | 0.68    | ND      | ND            | ND       | ND            |
| V32        | 1.79                 | ND             | ND                   | ND                   | ND                   | 0.69    | ND      | ND            | ND       | ND            |
| V33        | 0.60                 | ND             | ND                   | ND                   | ND                   | 0.49    | ND      | ND            | ND       | ND            |
| V34        | 0.65                 | ND             | ND                   | ND                   | ND                   | 0.52    | ND      | ND            | ND       | ND            |
| V35        | 0.91                 | ND             | ND                   | ND                   | ND                   | 0.52    | ND      | ND            | ND       | ND            |
| V36        | 0.91                 | ND             | ND                   | ND                   | ND                   | 0.53    | ND      | ND            | ND       | ND            |
| V37        | 1.52                 | ND             | ND                   | ND                   | ND                   | ND      | ND      | ND            | ND       | ND            |
| V39        | 1.53                 | ND             | ND                   | ND                   | ND                   | ND      | ND      | ND            | ND       | ND            |
| V310       | ND                   | ND             | ND                   | ND                   | ND                   | ND      | ND      | ND            | ND       | ND            |
| V311       | ND                   | ND             | ND                   | ND                   | ND                   | ND      | ND      | ND            | ND       | ND            |
| V312       | ND                   | ND             | ND                   | ND                   | ND                   | ND      | ND      | ND            | ND       | ND            |
| Mean       | 0.89                 | 0.00           | 0.00                 | 0.00                 | 0.00                 | 0.31    | 0.00    | 0.00          | 0.00     | 0.00          |
| Std dev    | 0.68                 | 0.00           | 0.00                 | 0.00                 | 0.00                 | 0.29    | 0.00    | 0.00          | 0.00     | 0.00          |

**Table A30** Time series data for W3D, September 1986 (concentrations in µg/L).

| Sample no. | Time (hr) | Methylene chloride | Chloroform | 1,2-Dichloroethane | 1,1,1-Trichloroethane | Trichloroethylene | Tetrachloroethylene |
|------------|-----------|--------------------|------------|--------------------|-----------------------|-------------------|---------------------|
| V11-V12    | 0.0       | 12.22              | 5.38       | <0.03              | 1.22                  | 242.50            | <0.02               |
| V13        | 1.3       | 16.38              | 1.04       | <0.03              | 1.37                  | 3.64              | <0.02               |
| V15        | 22.8      | 9.43               | 1.73       | <0.03              | 1.83                  | 6.63              | <0.02               |
| Mean       |           | 12.68              | 2.72       | 0.00               | 1.47                  | 84.26             | 0.00                |
| Std dev    |           | 2.86               | 1.90       | 0.00               | 0.26                  | 111.90            | 0.00                |

**Table A31** Time series data for W3D, April 1987 (concentrations in µg/L) .

| Sample no. | Time (hr) | Water level (M) | % Water level recovery | Methylene chloride | 1,1-Dichloro-ethylene | 1,1-Dichloro-ethane | Trans-1,2-Dichloro-ethylene | Chloroform | 1,2-Dichloro-ethane | 1,1,1-Trichloro-ethane | Carbon tetrachloride | Trichloro-ethylene |
|------------|-----------|-----------------|------------------------|--------------------|-----------------------|---------------------|-----------------------------|------------|---------------------|------------------------|----------------------|--------------------|
| V21        | 0.0       | 1.59            | 0.00                   | 0.84               | ND <sup>a</sup>       | 3.36                | ND                          | 0.57       | 0.37                | 2.12                   | 0.61                 | 2.14               |
| V22        | 0.0       | 4.61            | 0.00                   | 0.57               | ND                    | 3.17                | ND                          | 0.26       | 0.23                | 1.17                   | 1.17                 | 3.26               |
| V23        | 2.5       | 4.22            | 12.91                  | 0.94               | ND                    | 3.99                | ND                          | 0.56       | 0.44                | 1.41                   | 0.46                 | 6.10               |
| V24        | 2.5       | 4.22            | 12.91                  | 1.34               | ND                    | 3.55                | ND                          | 0.58       | 0.36                | 1.29                   | 0.57                 | 4.27               |
| V25        | 4.5       | 4.16            | 14.90                  | 1.32               | ND                    | 4.25                | ND                          | 0.52       | 0.07                | 1.04                   | 0.50                 | 4.20               |
| V26        | 6.0       | 4.06            | 18.21                  | 1.83               | ND                    | 3.72                | ND                          | 1.44       | ND                  | 1.22                   | 0.98                 | 5.99               |
| V27        | 6.0       | 4.06            | 18.21                  | 3.36               | ND                    | 3.77                | ND                          | 0.55       | ND                  | 0.62                   | 0.30                 | 3.36               |
| Mean       |           |                 |                        | 1.46               | 0.00                  | 3.69                | 0.00                        | 0.64       | 0.21                | 1.27                   | 0.66                 | 4.19               |
| Std dev    |           |                 |                        | 0.86               | 0.00                  | 0.34                | 0.00                        | 0.34       | 0.17                | 0.42                   | 0.28                 | 1.34               |

<sup>a</sup> Not detected

| Sample no. | Tetra-chloro-ethylene | Chloro-benzene | Dichloro-benzene | 1,2-Dichloro-benzene | 1,3-Dichloro-benzene | 1,4-Dichloro-benzene | Benzene | Toluene | Ethyl-benzene | m-Xylene | o- & p-Xylene |
|------------|-----------------------|----------------|------------------|----------------------|----------------------|----------------------|---------|---------|---------------|----------|---------------|
| V21        | 6.24                  | ND             | ND               | 1.07                 | ND                   | ND                   | 0.98    | 4.20    | 0.95          | ND       | ND            |
| V22        | 7.37                  | ND             | ND               | 0.28                 | ND                   | ND                   | 1.25    | 2.68    | 1.15          | ND       | ND            |
| V23        | 10.81                 | ND             | ND               | 0.48                 | ND                   | ND                   | 0.53    | 4.54    | 1.88          | ND       | ND            |
| V24        | 10.73                 | ND             | ND               | 1.37                 | ND                   | ND                   | 0.47    | 4.10    | 1.44          | ND       | ND            |
| V25        | 13.38                 | ND             | ND               | 1.77                 | ND                   | ND                   | 0.42    | 0.44    | 0.59          | ND       | ND            |
| V26        | 11.01                 | ND             | ND               | 1.90                 | ND                   | ND                   | 0.48    | 0.42    | 1.00          | ND       | ND            |
| V27        | 8.32                  | ND             | ND               | ND                   | ND                   | ND                   | 0.48    | 0.66    | 3.00          | ND       | ND            |
| Mean       | 9.69                  | 0.00           | 0.00             | 0.98                 | 0.00                 | 0.00                 | 0.53    | 2.43    | 1.43          | 0.00     | 0.00          |
| Std dev    | 2.29                  | 0.00           | 0.00             | 0.69                 | 0.00                 | 0.00                 | 0.43    | 1.76    | 0.74          | 0.00     | 0.00          |

**Table A32** Time series data for W3D, June 1987 (concentrations in µg/L).

| Sample no. | Time (hr) | Water level (M) | Water level recovery | Methylene chloride | 1,1-Dichloroethylene | 1,1-Dichloroethane | Trans-1,2-dichloroethylene | Chloroform | Dichloroethane | 1,2-Trichloroethane | 1,1,1-Trichloroethane | Carbon tetrachloride | Trichloroethylene |
|------------|-----------|-----------------|----------------------|--------------------|----------------------|--------------------|----------------------------|------------|----------------|---------------------|-----------------------|----------------------|-------------------|
| V31        | 0.0       | 2.87            | 0.00                 | 0.78               | ND <sup>a</sup>      | 4.45               | ND                         | 0.83       | ND             | 1.62                | 1.62                  | ND                   | 5.79              |
| V32        | 0.0       | 4.61            | 0.00                 | 0.40               | ND                   | 4.70               | 0.07                       | 0.83       | 0.08           | 0.08                | 1.70                  | ND                   | 7.89              |
| V33        | 2.5       | 4.41            | 11.49                | 0.68               | ND                   | 4.19               | ND                         | 0.32       | ND             | 1.16                | 1.16                  | ND                   | 4.12              |
| V34        | 2.5       | 4.41            | 11.49                | 0.81               | ND                   | 3.58               | ND                         | 0.51       | ND             | 1.11                | 1.11                  | ND                   | 4.53              |
| V35        | 4.5       | 4.39            | 12.64                | 1.31               | ND                   | 3.92               | ND                         | 0.35       | 0.05           | 1.18                | 1.18                  | ND                   | 7.74              |
| V36        | 4.5       | 4.39            | 12.64                | 0.92               | ND                   | 3.95               | ND                         | 0.40       | 0.15           | 1.77                | 1.77                  | 0.81                 | 5.63              |
| V37        | 6.0       | 4.36            | 14.37                | 1.10               | ND                   | 4.18               | ND                         | 0.57       | ND             | 1.15                | 1.15                  | ND                   | 4.97              |
| V38        | 6.0       | 4.36            | 14.37                | 0.45               | ND                   | 4.31               | ND                         | 0.79       | 0.11           | 1.57                | 1.57                  | ND                   | 6.46              |
| V39        | 7.5       | 4.32            | 16.67                | ND                 | ND                   | 4.31               | ND                         | 0.84       | ND             | 1.28                | 1.28                  | 0.45                 | 5.01              |
| V310       | 7.5       | 4.32            | 16.67                | 0.19               | ND                   | 4.01               | ND                         | 0.63       | ND             | 1.47                | 1.47                  | ND                   | 7.30              |
| V311       | 24.0      | 3.41            | 68.97                | 0.15               | ND                   | 3.55               | ND                         | 0.55       | ND             | 1.19                | 1.19                  | 0.35                 | 4.62              |
| V312       | 24.0      | 3.41            | 68.97                | 0.53               | ND                   | 3.84               | ND                         | 0.56       | ND             | 1.18                | 1.18                  | 0.38                 | 4.46              |
| Mean       |           |                 |                      | 0.61               | 0.00                 | 4.08               | 0.01                       | 0.60       | 0.03           | 1.37                | 1.37                  | 0.17                 | 5.71              |
| Std dev    |           |                 |                      | 0.38               | 0.00                 | 0.33               | 0.02                       | 0.18       | 0.05           | 0.23                | 0.23                  | 0.26                 | 1.28              |

<sup>a</sup> Not detected

| Sample no. | Tetra-chloroethylene | Chlorobenzene | 1,2-Dichlorobenzene | 1,3-Dichlorobenzene | 1,4-Dichlorobenzene | Benzene | Toluene | Ethylbenzene | m-Xylene | o- & p-Xylene |
|------------|----------------------|---------------|---------------------|---------------------|---------------------|---------|---------|--------------|----------|---------------|
| V31        | 8.61                 | ND            | ND                  | ND                  | ND                  | 0.65    | 0.94    | 1.41         | ND       | 18.83         |
| V32        | 8.71                 | ND            | ND                  | ND                  | ND                  | 0.62    | 0.10    | ND           | ND       | 18.10         |
| V33        | 13.37                | ND            | ND                  | ND                  | ND                  | ND      | ND      | ND           | ND       | ND            |
| V34        | 10.34                | ND            | ND                  | ND                  | ND                  | ND      | ND      | ND           | ND       | ND            |
| V35        | 11.25                | ND            | ND                  | ND                  | ND                  | 0.54    | 0.69    | ND           | ND       | 4.01          |
| V36        | 10.75                | ND            | ND                  | ND                  | ND                  | 0.90    | 1.35    | ND           | ND       | 5.00          |
| V37        | 8.70                 | ND            | ND                  | ND                  | ND                  | 0.45    | ND      | ND           | ND       | 2.07          |
| V38        | 14.07                | ND            | ND                  | ND                  | ND                  | ND      | ND      | ND           | ND       | ND            |
| V39        | 16.55                | ND            | ND                  | ND                  | ND                  | ND      | ND      | ND           | ND       | ND            |
| V310       | 13.19                | ND            | ND                  | ND                  | ND                  | ND      | ND      | ND           | ND       | ND            |
| V311       | 14.88                | ND            | ND                  | ND                  | ND                  | ND      | ND      | ND           | ND       | ND            |
| V312       | 12.12                | ND            | ND                  | ND                  | ND                  | ND      | ND      | ND           | ND       | ND            |
| Mean       | 11.88                | 0.00          | 0.00                | 0.00                | 0.00                | 0.26    | 0.26    | 0.12         | 0.00     | 4.00          |
| std dev    | 2.49                 | 0.00          | 0.00                | 0.00                | 0.00                | 0.33    | 0.45    | 0.39         | 0.00     | 6.68          |

# APPENDIX B BASE/NEUTRAL AND ACID FRACTION COMPOUNDS FOUND IN PROTOCOL PROJECT WELLS

**Table B1** Base/neutral data for samples collected 24 hours after purging in September 1986 (concentration units in µg/L).

| Wells            | Hexachloro-ethane | 1,3,5-Trichloro-benzene | 1,2,4-Trichloro-benzene | Hexachloro-butadiene | Hexachloro-cyclopentadiene | Pentachloro-benzene |
|------------------|-------------------|-------------------------|-------------------------|----------------------|----------------------------|---------------------|
| MDL <sup>a</sup> | 0.01              | 0.01                    | 0.01                    | 0.02                 | 0.05                       | 0.01                |
| V1S              | ND <sup>b</sup>   | ND                      | 0.12                    | ND                   | ND                         | ND                  |
| V1M              | <0.01             | 0.15                    | 88.41                   | ND                   | ND                         | 0.54                |
| V1D              | ND                | ND                      | 0.05                    | ND                   | ND                         | 0.03                |
| V2S              | 0.11              | 0.24                    | 30.67                   | ND                   | ND                         | ND                  |
| V2M              | ND                | 1.13                    | 125.78                  | ND                   | ND                         | ND                  |
| V2D              | ND                | ND                      | 0.14                    | 0.08                 | 0.16                       | 0.19                |
| V3S              | ND                | ND                      | ND                      | ND                   | ND                         | ND                  |
| V3D              | ND                | ND                      | ND                      | ND                   | ND                         | ND                  |
| V4D              | ND                | ND                      | ND                      | ND                   | ND                         | ND                  |
| W1M              | ND                | ND                      | 0.17                    | ND                   | 0.57                       | ND                  |
| W2D              | ND                | ND                      | 0.26                    | ND                   | ND                         | ND                  |
| W3D              | ND                | ND                      | 0.58                    | ND                   | ND                         | 0.01                |
| AP1              | ND                | ND                      | ND                      | ND                   | ND                         | ND                  |

<sup>a</sup> Method detection limit

<sup>b</sup> Not detected

| Wells | Hexachloro-benzene | Hepta-chlor | Aldrin | Heptachlor epoxide | Dieldrin | Endrin | Endrin aldehyde |
|-------|--------------------|-------------|--------|--------------------|----------|--------|-----------------|
| MDL   | 0.01               | 0.01        | 0.01   | 0.02               | 0.01     | 0.01   | 0.02            |
| V1S   | ND                 | <0.01       | 0.05   | ND                 | 0.04     | 0.55   | 0.04            |
| V1M   | 0.12               | 0.03        | 0.06   | 0.01               | 0.03     | 0.17   | 0.08            |
| V1D   | 0.02               | <0.01       | 0.04   | 0.02               | 0.06     | 0.38   | 0.07            |
| V2S   | 0.03               | ND          | 0.07   | ND                 | 0.17     | 1.38   | 0.05            |
| V2M   | ND                 | ND          | 1.93   | 0.20               | 0.12     | 0.64   | 0.05            |
| V2D   | 0.26               | ND          | ND     | 8.51               | 3.58     | 2.69   | 3.04            |
| V3S   | ND                 | ND          | ND     | ND                 | 0.09     | 0.77   | 0.03            |
| V3D   | ND                 | ND          | ND     | ND                 | 0.03     | 0.89   | ND              |
| V4D   | ND                 | ND          | ND     | ND                 | ND       | ND     | ND              |
| W1M   | 0.08               | 0.05        | 0.16   | 0.22               | 0.24     | 3.45   | 0.31            |
| W2D   | 0.02               | 0.07        | 0.08   | 0.05               | 0.06     | 1.14   | 0.16            |
| W3D   | 0.01               | 0.03        | 0.06   | 0.11               | 0.11     | 1.58   | 0.43            |
| AP1   | <0.01              | 0.02        | 0.03   | 0.12               | 0.44     | 0.59   | 0.23            |
| LB    | ND                 | ND          | ND     | ND                 | 0.01     | 0.02   | ND              |
| FB    | <0.01              | ND          | ND     | ND                 | 0.03     | 0.07   | ND              |
| FB    | 0.01               | ND          | 0.02   | ND                 | 0.02     | ND     | ND              |

**Table B2** Base/neutral data for samples collected in April 1987. N21 samples were collected before purging and N22 samples were collected 24 hours after purging. (All concentrations in µg/l)

| Wells            | Sample no. | Hexachloro-ethane | 1,3,5-Trichloro-benzene | 1,2,4-Trichloro-benzene | Hexachloro-butadiene | Hexachloro-cyclopentadiene | Pentachloro-benzene |
|------------------|------------|-------------------|-------------------------|-------------------------|----------------------|----------------------------|---------------------|
| MDL <sup>a</sup> |            | 0.01              | 0.01                    | 0.01                    | 0.02                 | 0.05                       | 0.02                |
| V1S              | N21        | ND <sup>b</sup>   | ND                      | 1.35                    | ND                   | ND                         | ND                  |
| V1S              | N22        | ND                | ND                      | 0.08                    | ND                   | ND                         | ND                  |
| V1M              | N21        | 0.15              | 2.20                    | 102.29                  | ND                   | ND                         | 0.31                |
| V1M              | N22        | 0.08              | 1.01                    | 167.21                  | ND                   | ND                         | 0.76                |
| V1D              | N21        | ND                | ND                      | 0.03                    | ND                   | ND                         | 0.02                |
| V1D              | N22        | ND                | 0.02                    | 6.64                    | ND                   | ND                         | 0.03                |
| V2S              | N21        | 0.13              | 0.19                    | 21.07                   | ND                   | ND                         | ND                  |
| V2S              | N22        | 0.18              | 0.79                    | 85.09                   | ND                   | ND                         | ND                  |
| V2M              | N21        | ND                | 0.34                    | 64.67                   | ND                   | ND                         | ND                  |
| V2M              | N22        | 0.22              | 0.59                    | 41.95                   | ND                   | ND                         | ND                  |
| V2D              | N21        | ND                | ND                      | 0.03                    | ND                   | ND                         | ND                  |
| V2D              | N22        | ND                | <0.01                   | 0.02                    | ND                   | ND                         | ND                  |
| V3S              | N21        | ND                | ND                      | ND                      | ND                   | ND                         | ND                  |
| V3S              | N22        | ND                | <0.01                   | 0.06                    | ND                   | ND                         | ND                  |
| V3D              | N21        | ND                | ND                      | ND                      | ND                   | ND                         | ND                  |
| V3D              | N22        | ND                | ND                      | 0.13                    | ND                   | ND                         | ND                  |
| W1M              | N21        | ND                | ND                      | 0.14                    | ND                   | 0.39                       | ND                  |
| W1M              | N22        | <0.01             | ND                      | 0.05                    | <0.01                | ND                         | 0.14                |
| W2D              | N21        | ND                | ND                      | 2.63                    | ND                   | ND                         | ND                  |
| W2D              | N22        | ND                | ND                      | 0.11                    | ND                   | ND                         | ND                  |
| W3D              | N21        | ND                | <0.01                   | 0.01                    | ND                   | ND                         | ND                  |
| W3D              | N22        | ND                | ND                      | <0.01                   | <0.01                | ND                         | ND                  |
| AP1              | N21        | ND                | 1.15                    | 2.50                    | ND                   | 0.45                       | 0.28                |
| AP1              | N22        | ND                | 0.23                    | 1.13                    | ND                   | ND                         | 0.18                |

<sup>a</sup> Method detection limit

<sup>b</sup> Not detected

Table B2 (cont'd.)

| Wells            | Sample no. | Hexachloro-benzene | Hepta-chlor | Aldrin | Heptachlor epoxide | Dieldrin | Endrin | Endrin Aldehyde |
|------------------|------------|--------------------|-------------|--------|--------------------|----------|--------|-----------------|
| MDL <sup>a</sup> |            | 0.01               | 0.01        | 0.01   | 0.02               | 0.01     | 0.01   | 0.02            |
| V1S              | N21        | ND <sup>b</sup>    | <0.01       | 0.06   | ND                 | 0.05     | 0.68   | 0.06            |
|                  | N22        | ND                 | 0.02        | 0.08   | ND                 | 0.08     | 0.39   | 0.13            |
| V1M              | N21        | 0.55               | 0.01        | 0.15   | ND                 | 0.06     | 0.09   | 0.04            |
|                  | N22        | 0.42               | 0.21        | 0.12   | ND                 | 0.23     | 0.20   | 0.18            |
| V1D              | N21        | <0.01              | <0.01       | 0.05   | 0.02               | 0.04     | 0.21   | 0.08            |
|                  | N22        | <0.01              | 0.01        | 0.07   | 0.03               | 0.05     | 0.32   | 0.10            |
| V2S              | N21        | 0.05               | ND          | 0.04   | ND                 | 0.11     | 1.11   | 0.06            |
|                  | N22        | 0.02               | ND          | 0.09   | 0.03               | 0.03     | 0.51   | 0.04            |
| V2M              | N21        | 0.25               | 0.01        | 0.15   | ND                 | 0.06     | 0.09   | 0.04            |
|                  | N22        | ND                 | ND          | 0.35   | 0.62               | 0.06     | 1.18   | 0.23            |
| V2D              | N21        | ND                 | 0.03        | 0.14   | 0.05               | 0.06     | 0.83   | 0.17            |
|                  | N22        | 0.01               | 0.01        | 0.08   | 0.02               | 0.06     | 0.36   | 0.06            |
| V3S              | N21        | ND                 | ND          | ND     | 0.02               | 0.08     | 0.53   | 0.06            |
|                  | N22        | ND                 | ND          | ND     | 0.01               | 0.04     | 0.48   | 0.06            |
| V3D              | N21        | ND                 | ND          | ND     | ND                 | 0.03     | 0.89   | ND              |
|                  | N22        | ND                 | ND          | ND     | ND                 | 0.09     | 1.07   | ND              |
| W1M              | N21        | 0.04               | 0.09        | 0.13   | 0.15               | 0.16     | 2.33   | 0.28            |
|                  | N22        | 0.05               | 0.13        | 0.17   | 0.10               | ND       | 0.83   | 0.17            |
| W2D              | N21        | 0.02               | ND          | 1.52   | ND                 | 0.01     | 0.16   | 0.13            |
|                  | N22        | 0.04               | 0.09        | 0.12   | ND                 | 0.13     | 1.58   | 0.24            |
| W3D              | N21        | 0.09               | 0.14        | 0.15   | ND                 | 0.16     | 4.59   | 0.78            |
|                  | N22        | ND                 | ND          | 0.87   | 0.12               | 0.23     | 0.41   | 0.03            |
| AP1              | N21        | 0.07               | 0.03        | 0.11   | 0.38               | 1.24     | 1.06   | 1.15            |
|                  | N22        | 0.04               | 0.02        | 0.03   | 0.22               | 1.18     | 1.10   | 0.30            |

<sup>a</sup> Method detection limit<sup>b</sup> Not detected

**Table B3** Base/neutral data for samples collected in June 1987. N31 samples were collected before purging and N32 samples were collected 24 hours after purging. All concentrations in µg/L)

| Wells            | Sample no. | Hexachloro-ethane | 1,3,5-Trichloro-benzene | 1,2,4-Trichloro-benzene | Hexachloro-1,3-butadiene | Hexachloro-cyclopentadiene | Pentachloro-benzene |
|------------------|------------|-------------------|-------------------------|-------------------------|--------------------------|----------------------------|---------------------|
| MDL <sup>a</sup> |            | 0.01              | 0.01                    | 0.01                    | 0.02                     | 0.05                       | 0.02                |
| V1S              | N31        | ND <sup>b</sup>   | ND                      | 0.04                    | ND                       | ND                         | ND                  |
|                  | N32        | ND                | ND                      | 2.72                    | ND                       | ND                         | ND                  |
| V1M              | N31        | 0.24              | 2.54                    | 153.31                  | ND                       | ND                         | 0.10                |
|                  | N32        | 0.60              | 4.99                    | 170.31                  | ND                       | ND                         | 1.98                |
| V1D              | N31        | ND                | ND                      | 3.78                    | ND                       | ND                         | 0.72                |
|                  | N32        | ND                | ND                      | 5.09                    | ND                       | ND                         | 0.02                |
| V2S              | N31        | ND                | 2.73                    | 16.88                   | ND                       | 7.56                       | 2.20                |
| V2M              | N31        | 0.28              | 0.51                    | 116.44                  | 1.25                     | ND                         | ND                  |
|                  | N32        | 0.26              | 1.14                    | 169.59                  | 0.94                     | ND                         | 0.05                |
| V2D              | N31        | ND                | ND                      | 1.89                    | ND                       | ND                         | ND                  |
|                  | N32        | ND                | ND                      | ND                      | ND                       | ND                         | ND                  |
| V3S              | N31        | ND                | ND                      | ND                      | ND                       | ND                         | ND                  |
|                  | N32        | ND                | ND                      | ND                      | ND                       | ND                         | ND                  |
| V3D              | N31        | ND                | ND                      | <0.01                   | ND                       | ND                         | <0.02               |
|                  | N32        | ND                | ND                      | ND                      | ND                       | ND                         | 0.04                |
| V4D              | N31        | ND                | ND                      | ND                      | ND                       | ND                         | <0.02               |
|                  | N32        | ND                | ND                      | ND                      | ND                       | ND                         | <0.02               |
| W1M              | N31        | ND                | ND                      | 6.27                    | 0.07                     | 1.60                       | 0.05                |
|                  | N32        | ND                | ND                      | 8.41                    | 0.07                     | ND                         | ND                  |
| W2D              | N31        | ND                | 4.73                    | 0.28                    | ND                       | ND                         | ND                  |
|                  | N32        | ND                | ND                      | 0.30                    | ND                       | ND                         | 0.04                |
| W3D              | N31        | ND                | <.01                    | 0.94                    | <0.01                    | ND                         | ND                  |
| AP1              | N31        | ND                | ND                      | 4.84                    | ND                       | 0.47                       | 0.50                |

<sup>a</sup> Method detection limit

<sup>b</sup> Not detected

Table B3 (cont'd.)

| Wells            | Sample no. | Hexachloro-<br>benzene | Hepta-<br>chlor | Aldrin | Heptachlor<br>epoxide | Dieldrin | Endrin | Endrin<br>aldehyde |
|------------------|------------|------------------------|-----------------|--------|-----------------------|----------|--------|--------------------|
| MDL <sup>a</sup> |            | 0.01                   | 0.01            | 0.01   | 0.02                  | 0.01     | 0.01   | 0.02               |
| V1S              | N31        | 0.01                   | ND              | ND     | ND                    | ND       | 0.43   | 0.06               |
|                  | N32        | ND <sup>b</sup>        | ND              | ND     | ND                    | 0.01     | 0.24   | 0.03               |
| V1M              | N31        | 0.02                   | 0.06            | 0.07   | 0.03                  | ND       | ND     | ND                 |
|                  | N32        | 0.66                   | 0.41            | 0.17   | ND                    | ND       | 0.56   | 0.13               |
| V1D              | N51        | ND                     | ND              | ND     | ND                    | 0.08     | 0.33   | 0.03               |
|                  | N32        | 0.02                   | ND              | ND     | ND                    | ND       | 0.21   | 0.20               |
| V2S              | N31        | 0.18                   | ND              | 0.10   | ND                    | 0.15     | 1.88   | 0.06               |
|                  | N32        | ND                     | ND              | 0.25   | 0.16                  | ND       | 0.40   | 0.04               |
| V2M              | N32        | ND                     | ND              | ND     | ND                    | 0.02     | 0.20   | 0.05               |
| V2D              | N31        | 0.02                   | ND              | 0.03   | ND                    | 0.02     | 0.16   | 0.16               |
|                  | N32        | ND                     | ND              | ND     | ND                    | 0.02     | 0.75   | 0.13               |
| V3S              | N31        | ND                     | ND              | <0.01  | ND                    | <0.01    | 0.11   | ND                 |
|                  | N32        | ND                     | ND              | 0.01   | ND                    | <0.01    | 0.11   | ND                 |
| V3D              | N31        | <0.01                  | ND              | ND     | ND                    | <0.01    | ND     | 0.10               |
|                  | N32        | 0.02                   | ND              | ND     | ND                    | <0.01    | 0.29   | 0.17               |
| V4D              | N31        | <0.01                  | ND              | ND     | ND                    | 0.03     | 1.25   | 0.17               |
|                  | N32        | 0.01                   | ND              | ND     | ND                    | <0.01    | 0.23   | 0.15               |
| W1M              | N31        | 0.04                   | ND              | ND     | ND                    | 0.26     | 2.47   | 0.27               |
|                  | N32        | ND                     | ND              | ND     | ND                    | 3.11     | 5.22   | 3.72               |
| W2D              | N31        | ND                     | ND              | 0.04   | ND                    | 0.03     | 0.44   | 0.06               |
|                  | N32        | ND                     | ND              | 0.03   | ND                    | ND       | 0.40   | 0.04               |
| W3D              | N31        | ND                     | ND              | ND     | ND                    | ND       | 2.06   | 1.04               |
| AP1              | N31        | 0.44                   | 0.29            | 0.09   | 0.59                  | 1.24     | 1.45   | 0.85               |

<sup>a</sup> Method detection limit<sup>b</sup> Not detected





